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ABSTRACT

This compilation lists research completed in the areas of health, physical education, recreation, and allied areas during 1969. It is arranged in three parts. Part 1 is a subject heading index in which cross references are given for all the listings in parts 2 and 3. Part 2 is a bibliography of published research, citing 801 articles published in 127 of the 198 periodicals reviewed. Part 3 lists 877 master's and doctor's theses from 73 institutions offering graduate programs in health, physical education, recreation, and allied areas. Most thesis references are accompanied by abstracts of the research; all are numbered in alphabetical order according to the institution. Appended are lists of the periodicals reviewed and institutions reporting. (JS)

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in Health, Physical Education, and Recreation

including international sources

Volume 12 1970 Edition

covering research completed in 1969

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Edited by **ROBERT N. SINGER** and **RAYMOND A. WEISS**

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CONTENTS

INTRODUCTION iv

PART I - INDEX 1

PART II - BIBLIOGRAPHY 17

PART III - THESES ABSTRACTS 63

PERIODICALS REVIEWED 287

INSTITUTIONS REPORTING 290

COMMITTEE MEMBERS 292

INTRODUCTION

This compilation lists research completed in the areas of health, physical education, recreation, and allied areas during 1969. It is arranged in three parts:

I. Index. In this section, cross references are given for all the listings in Parts II and III. References are arranged under the subject headings, which are in alphabetical order. Instructions for using the index are given at the top of page 1.

II. Bibliography. This is a listing of published research, citing articles published in 127 of the 198 periodicals reviewed by the Committee for Completed Research. The periodicals reviewed are listed on pages 287 through 289.

III. Theses Abstracts. These are master's and doctor's theses from 73 institutions offering graduate programs in health, physical education, recreation, and allied areas. Institutions reporting are listed on pages 290 and 291. Most references are accompanied by abstracts of the research and all are numbered in alphabetical order according to the institution. Names of institutional representatives sending in theses abstracts are indicated in parentheses after the name of the institution; major professors are in parentheses after each reference.

Universities and colleges are encouraged to submit abstracts of theses completed at their institutions in the year 1970 for inclusion in the next issue of Completed Research. Material should be sent to Robert N. Singer, chairman for Theses Abstracts.

Robert N. Singer
Raymond A. Weiss

Co-chairmen
Committee on Completed Research

PART I—INDEX

This index enables the reader to refer to the items of completed research listed in Parts II and III. Research topics are arranged in alphabetical order. The reference numbers following each topic correspond to the listings of completed research dealing with that topic. The capital letter B indicates a reference to be found in the Bibliography (Part II); the capital letter T indicates a reference to be found in the Theses Abstracts (Part III).

A

AAHPER youth fitness test: B 457; T 280, 403, 549, 559, 634
academic achievement: *see* achievement, academic
accidents: B 543, 750; T 137
acclimatization: B 767
  to altitude: B 7, 278, 280, 303, 476, 725
  to heat: B 123, 245, 251, 400, 553, 703
  to hypoxia: B 728
accuracy, effects on: T 131
achievement, academic: B 665; T 61, 99, 107, 116, 126, 225, 370, 384, 436, 448, 451, 459, 469, 680, 745, 747, 749, 750, 759, 834
  athletic: B 102
  see also reading achievement
action potential: B 128
activity
  effects of: B 609
  physical: B 87, 246
    and aging: T 176
    and heart disease: B 454
  restriction: B 335, 743
adaptation, organic: B 403
addiction: *see* drugs
administration: T 160, 183, 419, 430, 452, 493, 544, 578, 619, 647, 737
adolescents: B 88, 136, 196, 625
aerobic capacity: *see* metabolism; work capacity, aerobic
aerobic work: *see* metabolism; work, aerobic
age: B 298, 494, 709
  and body composition: B 28
  differences: B 596
  and exercise: B 38
  and health: B 210
  and heart rate: B 290
  and motor performance: B 632
  and physical activity: B 208, 335, 368, 509; T 460
  and physical fitness: B 365, 758; T 280
  and physical training: B 378, 627
  and pulmonary function: B 64, 206, 765
  and sex behavior: B 559
  and ventilatory capacity: B 205, 207
aggressiveness: T 331
agility: B 305; T 133, 136, 498, 561, 605
air pollution: *see* pollution, air
alcohol: B 71, 259, 408, 491; T 168, 171, 182, 192
  consumption: B 723
  education: T 683
  and fatigue: B 771
  and personality: T 168
  and response times: T 182
alcoholism: B 272, 398, 750
allergies: B 602
altitude: B 397
  and aerobic metabolism: B 7, 381

and athletes: T 850
metabolism at high: B 595
and physical performance: B 8, 66, 142, 183, 265, 302, 471, 476
and physiological response: B 62, 191, 279, 669, 751
and respiration: B 234, 419, 579, 682
and training: B 614
see also acclimatization
amputees: B 106
analysis, mechanical: B 177, 437; T 352, 534, 612, 623
photographic: T 352
anatomy: T 140
anemia: B 221
animals, laboratory
cats: B 3
dogs: B 110
mice: B 624
rabbits: B 357
rats: B 2, 163, 170, 174, 258, 281, 335, 401, 402, 551, 633, 663, 696, 790, 798, 799; T 145, 378
ankle injuries: B 312, 618
anthropometry: B 278, 320, 327, 328, 361, 516, 571; T 127, 133
anxiety: B 77, 464; T 306, 762
archery: B 262, 793; T 254
arm(s): B 637, 676, 677; T 484
arthritis: B 545
aspiration level: B 283; T 314
athlete(s), characteristics of: B 441; T 116, 257, 293, 294, 316, 360, 413, 435, 453, 458, 536
financial aid: T 625
married: T 551
performance of: B 348
personality, and: B 666
stress, and: B 716
athletic(s): T 732, 752, 764
administration: T 619, 741, 810
finances: T 720
status of: T 439, 705, 736, 737
union: T 258
women: T 111, 119, 128, 224, 275, 277, 294, 308, 453, 576, 721
see also sports competition
attitude(s): T 151a, 432, 525
toward athletic competition: T 71, 128
toward body image: B 423
integration: T 208
toward leisure activity: T 149, 167, 412, 575, 646, 740, 789, 843
toward physical education: B 50, 519, 531; T 67, 94, 105, 153b, 166, 246, 266, 271, 366, 396, 438, 540, 543, 550, 628, 684, 714, 833, 843, 844
toward physical fitness: B 96
audience, effects of: T 188, 648
audio-visual aids, *see* films; instructional aids; visual aids
audio-visual techniques: T 79, 138, 429, 501
aviation, stress: B 22

B

badminton: B 237, 720; T 209
balance beam: B 629
dynamic: T 64, 328, 485
static: B 787, 789; T 64, 328
ballistocardiograph: T 153a
baseball: B 114, 699; T 109, 202, 557, 766, 797, 828
basketball: B 238; T 91, 105, 316, 560, 562
shooting: T 106, 132, 138, 239, 385, 471, 473, 838
skills: T 92, 136, 217
women's: T 404
Beecher, Catharine: B 308
behavior: B 734
see also health; physical education; sex
bicycle ergometry: *see* ergometry, bicycle
bicycle riding: T 323
biochemistry: B 749
biomechanics: B 522; T 478
blood: T 54
chemistry: B 118, 119, 181,

248, 349, 455, 503, 583, 686, 715; T 54, 151, 253, 254, 391, 651, 717, 821, 826
cholesterol: B 452, 551; T 391, 595
effects of exercise on: B 127, 225, 282, 403, 443, 452, 503, 759; T 821, 826
donation: T 3
composition: B 280
flow: B 3, 165, 314, 355, 356, 385, 405, 470, 585
effects of exercise on: B 129, 220, 300, 585, 696
measurement of: B 13; T 583
pressure: B 290, 291, 378, 654
effects of exercise on: T 322
volume: B 627
boating: B 422
body appearance: B 211
body image: B 23, 144, 156, 172, 423, 453, 516, 672; T 150, 801, 871
see also self-concept
build: B 172, 327, 328, 673; T 140, 672
composition: B 20, 78, 157, 326, 361, 397, 415, 633, 711; T 190
fat: B 83, 179, 274, 361, 366, 565, 609; T 2, 76, 340
measurements: B 162
mechanics: B 46, 112, 269, 536, 566, 581
positioning: B 466, 479
size: B 58, 226, 508, 748; T 506
surface: B 517
weight: B 149, 773; T 127
loss of, *see* weight loss
bone: B 14, 451, 468, 724
bowling: B 668; T 494, 665, 784
boxing: B 67, 552
brain: B 363
breath control
holding: B 120, 550
breathing: B 120, 293, 579

C

calcium: B 631
camping: B 34; T 571
cancer: B 132, 432, 592, 740, 752, 777, 796
bone: B 61
canoeing: T 122
carbon dioxide: B 120, 379, 411; T 322, 768
capacity, aerobic: *see* work capacity, aerobic
cardiac cost
output: B 267, 358, 405, 661, 711
effects of exercise on: B 290, 404, 473; T 180, 652
effects of training on: T 275
rhythm: B 589
cardiorespiratory adaptation: B 687
and exercise: B 150
fitness: T 125, 403, 716, 842
measurement: T 45, 380, 866
performance: T 580, 590
response: T 380, 590, 842, 866
cardiovascular condition: B 564; T 417, 431
function: B 339, 550, 681; T 35, 177, 200, 391, 395, 564, 610
response: B 99
stress: B 3, 620; T 43
variables: T 56, 86, 177, 200, 292, 302, 583, 602
see also disease, cardiovascular; endurance, cardiovascular; heart disease
catching: T 835
cats: *see* animals, laboratory
cells: T 687
children, elementary: B 665
growth of: B 20, 383, 394, 560, 605, 733
handicapped: B 268
nutrition: B 609
cholesterol: B 141; T 3, 391, 595
blood: B 452, 551
serum: B 591; T 190

cinematography: B 528; T 204, 278, 336, 352, 409, 476, 488, 489, 514, 623, 633
circulation: B 56, 191, 395, 640, 751
and exercise: B 535
and smoking: B 55
class organization: B 81, 732
climate: B 187
cold: B 300, 370
effects of: B 215, 395
water treatments: T 557
competition: B 464, 736, 737; T 188, 297, 817
see also sports competition
computer techniques: B 112, 566, 681; T 505
conceptual models: B 434
conditioning, physical: T 90, 147, 270, 317, 432, 482, 800
conservation: B 289
contraception: B 295, 315, 357, 456, 492, 641, 650, 652, 670, 740
contraction: *see* muscle contraction
coordination, muscular: T 538
creativity: B 384; T 342
cues, kinesthetic and visual: T 5, 13, 20, 22, 809
culture, effects of: T 68
and sport: T 16, 57, 118, 353
curriculum: T 629
health: T 683
physical education: B 346; T 93, 146, 235, 242, 266, 419, 531, 550, 573, 792, 793, 798, 816, 831, 832

D

dance: T 539, 541, 569, 570, 579, 690, 701, 852, 859
ballet: T 411, 522
modern: T 377, 405, 406, 522, 538, 563, 698, 702, 711, 856
folk: T 520
square: T 197, 520
defense mechanisms: T 704
dehydration: B 438; T 290, 437
dental health: *see* health, dental
depressants: *see* drugs
development: B 451
strength: T 663
diabetes: B 27, 329, 420, 791
diet: B 147, 168, 300
effects of: B 318, 326, 686
and exercise: B 623; T 287
habits: B 18, 474; T 529
and heart disease: B 165
and obesity: B 39, 79, 83, 250, 633; T 267, 363
see also fasting; weight loss
differences, individual: B 103, 461, 676, 694
disability: B 138
physical: T 156, 357, 700, 785
discipline: B 734
discus throwing: T 252
disease(s): B 15, 593; T 600
cardiovascular: B 489
communicable: B 26, 115, 427, 778
diagnosis: T 508
heart and physical training: B 255
industrial: B 178, 435, 603, 604
lung: B 6, 178, 660, 790
respiratory: B 266
see specific diseases; heart disease
diving: B 73, 313, 314, 685, 702; T 387
scuba: B 169, 616, 757
dogs: *see* animals, laboratory
dominance: B 554; T 499, 675, 695, 708
driver education: B 678; T 161, 187
tests: T 154, 163
driving: B 90, 154, 408, 491, 707; T 154, 157, 163, 187, 192
drug(s): B 351, 675
addiction: B 390
effects of: B 154, 242, 271, 302, 322, 408, 449, 558, 708, 722, 749; T 84, 276, 319, 425, 726
and physical performance: B 8
practices: B 139
and psychomotor performance: T 84, 425

usage: B 689, 690; T 42, 335

E

eating and physical performance: B 235; T 263
education: *see* driver education; outdoor education; physical education; sex education
educators: *see* name of person; *also* physical educators
electrocardiography: B 238, 656, 723
electroencephalography: B 706, 729
electrogoniometry: B 350, 598; T 1, 265
electromyography: B 60, 68, 306, 494, 588, 610, 659, 801; T 252, 289, 657, 769, 823
emotion: B 77, 464; T 306, 762
emotionality: B 426
  of rats, exercise and, B 163, 799
endocrine function: B 183, 253, 386, 484, 574
endurance: B 475, 612, 772; T 63, 334, 445, 498, 552
  cardiovascular: T 388, 672, 712, 867
  isometric: B 101, 102
  muscular: B 743; T 445, 498, 552
  running: T 37
  swimming: B 567
  training: T 304, 327, 333
energy cost: B 16, 74, 79, 251, 261, 472, 578, 648, 658, 683, 792; T 46, 169, 344, 363, 485
environment: B 766; T 600
  and work capacity: B 792; T 671
epidemiology: B 115, 222, 392, 465, 599
equipment: T 46, 97, 300, 632
  protective: B 584; T 12, 28, 608, 616
ergometry: B 69, 292
  bicycle: B 772
ethnic differences: B 39, 40, 54, 58, 291, 334, 386, 439, 500, 539, 554, 784
  and growth: B 235, 444
  and physical fitness: B 184
  and work capacity: B 16
ethnic groups: B 107; T 783
evaluation: *see* specific subject
exercise
  and drugs: B 117
  effects of, on: B 157, 547
    blood volume: B 576
    body composition: B 367
    body tissue: B 2, 798
    body water: B 100
    cardiac function: B 216, 317
    cardiopulmonary function: B 150, 505
    cardiovascular function: B 15, 231, 242, 285, 640, 656, 661; T 35, 177, 200, 391, 395, 564, 610
    circulation: B 197; T 47
    coronory patients: B 122, 780
    health: B 323, 402, 425, 647
    metabolism: B 36, 227, 348, 619; T 866
    muscle: B 214, 252, 254, 257, 258, 502, 557, 590; T 17, 256, 332, 533
    oxygen consumption: B 299, 596; T 322
    physical ability: B 232, 346
    physical fitness: B 738
    physiological function: B 248, 572, 577, 715, 746
    pulmonary function: B 419, 436, 688
    reaction time: B 485
    renal capacity: T 715, 746
    weight: T 250
isometric: B 133; T 289
isotonic: B 133
physical fitness, and: B 368; T 44
physiology: T 185
program: B 197, 429; T 555, 667, 797, 808

recovery from disease, and: B 294, 593, 731
respiration, and: T 496
response to: B 194
steady state: B 714
stress: B 63, 347; T 807
tolerance: B 174, 236
ventilation, and: B 120, 418; T 854
see also cardiorespiratory response
Exer-Genie: T 90, 679, 682

F

fasting: B 416
fat, body: *see* body fat
fatigue: B 400, 638, 755, 771; T 131, 319, 320, 385, 713, 755
and work capacity: T 60
fats: B 141; T 829, 855
feedback: B 228, 413, 450, 718; T 273, 376, 556, 644, 654, 661, 668, 811, 817, 863
fencing: T 345, 498
films: T 87, 197, 262, 401, 418, 428, 782
flexibility: B 287; T 77, 153c, 251, 460, 565, 594, 649
flourides: B 273, 389
football: B 51, 238, 428; T 6, 78, 102, 162, 370, 511, 525, 531, 534, 753
injury: B 392, 584, 618; T 38, 123, 286, 477, 524
force: B 529; T 284, 368

G

generality vs. specificity: B 10, 460, 770; T 301, 337, 450, 464, 863
glandular function: B 31, 669, 782
golf: B 718; T 79, 152, 264, 295, 470
grading: T 247, 400, 620, 691
gravity, specific: T 599
group dynamics: B 617; T 413
growth: B 134, 234, 235, 383, 530, 605, 697, 698, 794; T 450, 464
exercise and: B 196
hormone: B 254
guidance counseling: T 355
gymnastics: B 571, 687; T 113, 134, 204, 262, 352, 623, 744

H

haemodynamics: *see* blood flow; blood pressure
hand: B 68, 337
handball: B 310; T 230
handedness: *see* dominance
handicaps: B 137, 217, 625
Harvard step test: B 17, 236, 345, 486, 498
health attitudes: B 85, 135, 272, 273, 501, 518; T 238, 399
behavior: B 167, 600; T 734
care: B 458, 532, 791
dental: B 30, 85, 377, 500, 710
education: B 635, 800
attitude toward: T 521
evaluation of: T 214, 248, 731
secondary school: T 124, 135
educators: B 376
effects of training on: T 172
environment: B 209, 691; T 600
hazards: B 126, 204, 373, 543, 601, 603
hostility and: T 186
infant: B 45, 700, 701
knowledge: B 11, 98, 136, 655; T 233, 399
laws: B 301, 333
mental: B 362, 442
misconceptions: B 49
occupational: B 634
problems: B 88, 138, 221, 674, 675
public services: B 266, 333, 338, 427, 544, 745
psychiatric: B 680
school: B 92, 107, 108, 109, 202, 362, 431, 487, 523, 532, 548, 797
see also curriculum
hearing: B 57, 286, 309, 717; T 10, 328, 329, 485

heart action: B 317
and exercise: B 97, 231, 776
disease: B 4, 65, 159, 267, 329, 594
and climate: B 187
detection of: B 109, 162; T 153a
and diet: B 40, 171, 394, 591
and exercise: B 29, 72, 122, 203, 255, 294, 365, 442, 454, 514, 515, 780
and physical fitness: B 372
see also electrocardiology; hypertension; smoking; specific diseases
and exercise: B 140, 707
rate: B 74, 246, 290, 473, 498, 570, 627, 699; T 481, 597
and coaching: B 238
effects of exercise on: B 82, 97, 679; T 39, 205, 443, 755
recovery: T 272, 312, 642
and stress: B 130, 244, 325, 648
and swimming: B 448, 756
volume: B 56
heat: T 313
acclimitization to: B 245, 251, 400, 553, 703
stress: B 298
tolerance: B 47
and exercise in women: B 37
hemiplegia: B 60
hepatitis, infectious: B 593
hip: B 210, 350, 568, 744
history, associations: T 622, 727, 786
Etruscan civilization: T 27
football: B 428; T 6, 162
institutions: B 754; T 351, 688
lacrosse: T 30
Plato: B 276
Olympic games: T 509
sports: B 319; T 7, 18; 24, 27, 215, 222, 350, 560, 732, 735, 752, 764, 795, 799, 839
YMCA leadership schools: B 753
see also physical education, history of
hockey, field: T 490, 849
ice: B 483; T 49, 638
helmets: T 12, 28, 616
hormones: B 794
humidity: B 47
hypertension: B 13
hypertrophy: B 252
hypnosis: B 131, 339, 549
hypoxemia: B 521
hypoxia: B 195, 239, 374, 405, 406, 671, 725; T 854

I

immunization: B 26, 158, 333, 742
inactivity: B 433
India: B 58, 236, 334, 560, 652
individual differences: B 103, 461, 676, 694
infant health: B 45, 700, 701
see also nutrition
influenza: B 742
inhibition: B 783
proactive: T 318
retroactive: T 572
injuries: B 113, 125, 307, 447, 458, 534, 537, 601, 735; T 696, 790, 846
ankle: B 312
blisters: B 204
boxing: B 67, 552
care of: B 67, 618, 626; T 348
football: B 392; T 38, 123, 286, 477, 524
joint: B 336, 409, 534
knee: B 1, 618; T 286
ligaments: B 663
skiing: T 25
spine: B 678
spleen: B 447
tendon: B 164
trampoline: T 137
instructional aids: B 556; T 189, 209, 429, 748, 787, 788, 800, 814, 875
instrumentation: T 311

intelligence: B 667, 719; T 185, 451
and perceptual-motor ability: B 233; T 116, 398, 469, 745
interests, children's: T 455, 456
intramurals: T 51, 98, 107, 277, 384, 492, 497, 587, 756, 758, 780

J

job performance: B 364
jogging: B 746
joint: B 336
jump: T 64
broad: T 75, 612
vertical: B 466; T 199, 303, 475, 489, 555, 601

K

karate: B 409
kicking: T 514, 876
kinematics: B 46; T 346, 484
kinesiology: B 68, 128, 350, 495, 566, 568, 653, 744
kinesthesis: B 155, 529; T 150, 221, 269, 538, 543, 545, 574
knee(s): B 17, 217, 536, 618
see also injury, knee; strength, knee

L

lacrosse: T 30, 409, 657
lactic acid: B 129, 220
leadership: T 645
learning: B 243, 259, 424, 440, 462, 529, 769
ability levels: T 31
effects of fatigue on: B 75
motor: B 19, 24, 75, 103, 105, 148, 199, 212, 240, 260, 413, 417, 464, 611, 637, 693, 770
motor skill: B 461, 542, 563, 636, 638, 692, 732; T 141
perceptual-motor: B 5, 186, 277, 467, 573, 632, 695, 721
skill: B 622
sport skill: B 718
leg(s): B 495, 637
see also strength, leg
leisure activity: B 89, 781
preferences: T 158, 179, 502, 613, 761, 777, 796
and age: B 95
ligaments: B 520, 536
liquids: T 437
lung(s): B 270
lung cancer: *see* cancer, lung

M

maturation: T 450, 461, 464, 465
measurement: B 38
anthropometric: B 565, 773; T 431, 626, 874
attitude: T 194
balance: B 493, 629
body composition: B 366
cardiac output, of: B 358, 385, 713; T 150
cardiovascular: B 198, 399; T 11, 431
circulatory-respiratory: T 716
endurance: B 152, 153; T 219
force: T 368
health education, of: T 211, 692
hearing: B 57, 76, 286, 309, 717
motor ability: T 382
movement: T 505
oxygen consumption: B 160; T 19, 427
perception: T 249
physical fitness: B 10, 17, 166, 457, 582; T 403
physiological: B 570; T 29, 157
psychological: B 453, 516; T 157
range of motion: B 337, 350; T 219
reaction time: B 511
reliability: B 42, 43
resistance: T 347
running speed: B 332
sensorimotor: B 48, 169, 642, 721
skill: T 41, 92, 96, 112, 813
skinfold: B 274
sport skill: B 175, 331, 483, 720, 793; T 115, 136, 159, 305,

356, 404, 424, 490, 815, 858
sportsmanship: B 347
step test: B 345; T 417, 431
strength: B 9, 151, 341, 343, 676; T 219, 291, 446
test reliability: B 457
of testing: T 36
vision: B 407
mechanical principles: T 109
medical examination: B 65
practices: B 329
memory: B 259
short-term: T 5, 13, 20, 22, 73, 318, 434
menstruation: B 201, 670, 794
mental ability: B 268
task: T 380
see also performance, mental; practice, mental; retardation
mental illness: B 351, 491, 504; T 395
metabolism: B 15, 25, 70, 72, 147, 176, 227, 315, 348, 403, 606; T 354, 866
aerobic: B 195, 369, 499
altitude, at: B 595
carbohydrate: B 595
cholesterol: B 401
obesity, and: B 27, 416
mice: *see* animals, laboratory
mongolism: T 611
mortality: B 140, 435, 600, 604
and alcoholism: B 398
motion sickness: B 586
motivation: B 87, 345, 621, 628; T 122, 349, 528, 634, 686, 694
motor ability: B 268; T 390, 398, 412, 415
creativity: B 561
development: B 233; T 81, 85, 444
output: B 783
performance: B 10, 199, 508, 636, 637, 642, 694, 770, 775
predicted success: T 296
response: B 228, 569
retarded: B 200
skills: B 412, 413, 561, 632, 638, 727, 769; T 865
mental practice of: T 178, 379, 392, 397
training: B 353; T 230
tasks: B 104, 462, 562, 695, 761
mountaineering: B 669
movement: B 112, 643
arm: B 410; T 744
concept: T 503, 845
exploration: T 143, 147, 408
joint: T 255
measurement of: T 643
patterns: T 196
time: B 52; T 236, 259, 330, 467
multiple sclerosis: B 318
muscle(s): B 110, 434, 476, 502, 659; T 874
activity: B 380; T 252, 289, 769, 823
electrical: T 482
arm: T 319, 320, 332
chemistry: B 219, 252, 257, 443, 524, 525
contraction: B 52, 311, 489, 497; T 656
isometric: B 736, 737
force: B 32
function: B 510
size: B 253
skeletal: B 524
stretching: T 268, 591
stimulation: B 220, 646
tension: B 801; T 710
see also strength
muscular girth
work: T 718

N

narcotics: *see* drugs
Negroes: B 733; T 208
nerve(s): B 211, 260, 296, 611, 654, 729, 783
endings: B 562
motor: B 240, 749; T 861
neuromuscular system: B 624
neurophysiology: B 589
noise: T 378, 473
norms: B 38, 560, 658; T 243, 446

nurses: T 526
public health: B 288
school: B 599
nutrition: B 141, 168, 221, 375, 470, 507, 539, 551, 555, 631
and altitude: B 116, 142
effects: B 71, 171, 444
growth and: B 20, 698
in infants: B 45, 394, 525, 700, 701
knowledge of: B 474, 763
proteins in: B 157
and work capacity: B 16, 192, 530, 580, 741
nutritional status: B 540

O

obesity: B 28, 440, 546, 633, 657, 747; T 2
effects of exercise, and: T 250, 267, 472
metabolism and: B 27, 70, 499
physical activity, and: B 264
physical fitness, and: B 145
psychological factors, and: B 23, 247, 250
treatment of: B 80
occupational health: B 634
outdoor education: T 14
oxygen consumption: B 66, 111, 149, 160, 195, 220, 299, 455, 481, 579, 596, 597, 627, 679, 772, 784; T 53, 63, 848
effects of exercise on: T 322, 580
measurement of: T 19, 427
prediction of: T 155
debt: B 35, 110
intake: *see* oxygen consumption
transport: B 197, 381
uptake: *see* oxygen consumption

P

pacing: T 443
pain: T 244
patients: B 90
perception: B 119; T 153, 249, 680, 718, 813
visual: B 616; T 33, 546, 822
visual-motor: B 467
weight, of: B 23
perceptual-motor performance: *see* performance, perceptual-motor; learning, perceptual-motor
performance, athletic: B 275, 283
mental task: B 374; T 380
mentally retarded, of: T 65, 566, 567, 589, 641, 676
motor: B 190, 459; T 31, 70, 75, 129, 141, 382, 503, 611, 840
task: B 275, 573
motivation, and: B 352
noise and: T 378
perceptual-motor: B 186, 667, 712, 769
physical: B 302, 304, 580, 581, 648; T 463
and attitude: B 50
effects of observation on: T 188, 648
see also physical fitness
psychomotor: B 148, 173, 351, 387, 764
of children: B 161
of mentally retarded: B 200; T 386
skill(s): B 622
stress, under: B 22, 512; T 868
personality: B 51, 247; T 168
academic achievement and: T 61
athletic achievement and: B 143, 321, 775; T 232, 257, 297 343, 420, 535, 872
differences: B 297, 364, 666
physical activity and: B 87
recreation preferences and: B 324
traits: B 482, 680
see also physical education majors; physical fitness; sports; swimmers
pesticides: B 662, 664, 768
philosophy: T 215
photography: B 522
physical activity: *see* activity, physical

physical attributes: B 182, 305, 667
physical education: T 537
adapted: T 101, 195, 206, 299, 567, 641
attitudes toward: *see* attitudes
behavior, and: B 630
effects of: T 76, 85, 393, 410, 707
evaluation of: T 8, 48, 173, 248, 383, 729, 731
facilities: T 793, 798
foundations of: B 774; T 383
history of: T 68, 226, 229, 242, 260, 367, 441, 462, 493
YMCA: B 753
intermediate grade, in: T 371
law and: T [illegible], 203, 627
leisure, and: B 439
objectives: B 613
in primary grades: T 371, 501, 573, 785, 845
in secondary grades: T 80, 82, 779
scholarly content: T 114
service program: T 532, 771, 812
men: B 274, 359, 423
women: B 359, 373, 390, 441
success in: T 220
status: T 124, 439
see also curriculum; professional preparation
physical educati[illegible]iors, personality traits [illegible], 279, 294, 360, 435, 44[illegible], 453, 457, 518, 536, 666, 724, 763, 789, 805
see also professional preparation
physical educators: T 183, 282, 309, 355, 361, 542, 621, 630, 647, 703, 725, 870
physical fitness: B 12, 275, 285, 433, 519, 582, 630, 673, 713; T 325, 416, 513, 615, 776, 803
age, and: T 280
attitude, and: B 96
effects on: B 34; T 48, 89, 153, 532, 824
ethnic differences and: B 54, 184
intelligence, and: T 99, 107, 126, 774
norms: B 73
personality and: T 103, 674
physiological responses, and: B 382, 583
sports participation and: T 358, 362, 495, 745
training program: B 340; T 81, 83, 85, 604, 673
women, of: B 758; T 153d, 613
see also measurement; obesity; tests
physical training: B 180, 292, 367, 378, 564, 590, 627
heart disease, and: B 122
heat tolerance, and: B 703
industry, in: B 188
physicians: B 135, 739; T 508
physiological factor: B 176; T 313, 322, 582
and fitness: T 185
function: B 148, 230, 607
measures: B 13, 77, 93, 169, 174, 230, 570, 665, 716; T 140
responses: B 8, 31, 33, 36, 59, 86, 130, 219, 229, 360, 382, 406, 469, 571, 586, 619, 712, 785
variables: B 388
play: B 384, 762; T 175
therapy: B 223
plethysmography: B 355, 356
poisoning: B 662
pole vaulting: B 177; T 300, 548, 772
pollution, air: B 777
ponderal index: B 320
posture: B 267, 327, 653; T 402, 635, 649, 706
power: B 704; T 268, 285, 433
practice distributed: B 212
effects: B 103, 694, 787; T 106, 132, 217
massed vs. distributed: B 104; T 60, 89, 324, 329, 554, 803, 804
mental: B 563; T 178, 379, 392, 397, 422

motor skill, of: B 542; T 178, 218, 230, 397, 422
sequence: B 190; T 653
technique: T 304, 471
pregnancy: B 284, 371, 430, 492; T 723
pressure, atmospheric: B 303
preventive medicine: B 710; T 123
professional preparation: B 393; T 110, 129, 220, 231, 237, 282, 309, 361, 429, 639, 741, 870
meetings: T 364
programed instruction: B 5; T 581, 585, 592, 658, 819
proprioception: B 608; T 321
psychodromes: B 342
psychological characteristics: B 384, 441
factors: B 330, 607; T 448, 582, 687
function: B 322, 549, 569
psychomotor performance: *see* performance, psychomotor
public health: *see* health, public
pull-ups: B 53, 152; T 88, 365
pulmonary circulation: B 379
diffusion: B 66, 538
function: B 74, 206, 334, 339, 436, 585, 682, 730; T 597, 610
ventilation: *see* ventilation
pulse pressure
rate: T 56
push-ups: B 306

R

rabbits: *see* animals, laboratory
rabies: B 465, 639
racial factors: B 496, 517
radiation and endurance: B 612
range of motion: B 415
rats: *see* animals, laboratory
reaction time: B 41, 213, 243, 268, 363, 387, 396, 459, 485, 511, 706; T 236, 241, 259, 276, 330, 414, 467, 512
reading achievement and motor training: B 727; T 369, 372, 442, 660, 680, 699, 702, 822
recovery: T 34, 547
rates: T 272
time: T 577
recreation: B 324, 429, 432, 651; T 4, 23, 32, 165, 193, 245, 374
behavior, and: T 170
community: T 240, 341, 520, 728, 738, 757
education: T 216
environment and: T 479
evaluation of: T 662, 669, 722, 731
facilities: T 719, 775, 791
handicapped, for: T 142, 148, 156, 184, 212, 568, 689, 730
history of: T 326, 394
see also: curriculum
reducing: *see* diet; fasting; weight loss
reflex action: B 228
time: T 678
rehabilitation: B 4, 106, 414, 731; T 144, 659
reinforcement: B 24, 429, 445, 621
relaxation: B 434, 549; T 807
reliability, test: B 457, 486
reminiscence: B 695
reproduction: B 201; T 207
research methods: T 232, 243, 311
respiration: B 86, 270, 354, 550; T 483
exercise, during: B 149, 316, 647; T 496
immersion, in: B 756
response time: T 78, 227, 321
rest: B 352, 693
retardation: B 24, 340, 674; T 33, 65, 283, 324, 589, 611, 676
educable: T 299, 386, 566, 567, 641
performance: B 200
trainable: T 142, 148
retention: B 24, 424; T 329, 653
rewards: T 221
rhythm: T 820
rhythmic ability: B 643; T 213
pattern: B 269
riding: T 869
rope skipping: T 125, 443

rubella: B 222, 284
running: B 481, 533, 658, 715
distance: T 140, 491, 582
sprint: B 331, 332; T 140, 281, 284, 298, 478
stride: T 488
techniques: B 193; T 130, 263, 292
treadmill: B 78, 198, 281

S

safety: B 488, 584
sampling: B 44
school withdrawal: T 52
scoliosis: B 588, 730
self-concept: B 114, 156, 519; T 140, 410, 426, 507, 607, 661, 674, 700, 789, 794, 871
see also body image
semicircular canals: B 166
serum cholesterol: *see* cholesterol
sewage disposal: B 209, 218
sex behavior: B 559
differences: B 134, 181, 298, 698
education: B 49, 84, 202, 359, 477, 478; T 407, 480, 510, 527, 802
and vision: B 426
knowledge: T 210, 527, 739
shoulder: B 534
skating
ice: B 261; T 159
skeletal muscle: B 524
structure: B 14, 134, 468, 724
skiing: B 325, 537; T 853
skill technique: B 193, 262, 541, 702
transfer of: B 277
see also performance, skill; sports
skinfold: *see* body fat
sledding: B 447
sleep: B 388
arousal: B 649
deprivation: B 513
and performance: B 512
smoking: B 39, 132, 224, 644, 645, 729; T 238
and cancer: B 587, 752
and children: T 685
and circulation: T 151
and endurance: B 567
habits: B 131, 518; T 742
knowledge: T 174, 189, 194
and lungs: B 575; T 440
and metabolism: B 55
and morbidity: B 603
and personality: B 779
and ventilation: T 440
soccer: B 216; T 191, 346, 637, 640, 839
social factors: B 689, 690; T 416, 457
image: B 672
mobility: B 289
status: B 89, 159, 167, 432, 480, 490
socioeconomic factors: T 339, 343, 375, 381, 513, 728, 761, 774
sociometry: B 527
softball: T 71, 305, 828
somatotype: T 133, 466
space flights: B 510, 649
spatial relations: B 119, 616; T 269, 474, 675
specificity vs. generality: B 10, 460, 770; T 301, 337, 450, 464, 863
spectators, effects of: T 188, 648
speed: B 410, 460, 677
spinal cord: B 610
spine, lumbar: B 520, 678
spirometry: B 207, 334
sport(s): T 617
competition: B 684; T 71, 108, 121, 420, 576, 618, 868, 873
clubs: B 527
hazards: B 537
interest in: B 626
leisure, and use of: B 781
participation: B 445; T 117, 120, 122, 358, 362, 448, 495, 519, 535, 770
personality, and: B 143; T 232, 257, 297, 343, 420
sociology: B 114, 189, 393, 421, 422, 490, 527

strategy: B 719
success in: T 562, 860
see also injuries
sportsmanship: T 308, 873
sport psychology: B 762
stimulus: B 363; T 713
visual: B 48, 213
strength: B 369, 415, 475, 608, 676, 731; T 256, 444, 445, 468, 552, 635, 650, 841
ankle: B 789
arm: B 32, 410, 676, 677; T 64, 254, 681, 808
back: T 1
fatigue and recovery: B 94
grip: T 515, 538
isometric: B 101, 506; T 315
knee: T 291, 533
leg: B 343; T 50, 95, 555
shoulder: T 254, 255, 291, 808, 825
training: B 52, 133; T 304, 530, 679, 825
concentric and eccentric: T 9, 15, 50, 259
isometric: B 121; T 9, 15, 50, 315, 670, 682, 754, 836
isotonic: B 121; T 315, 650, 670, 754, 836
stress: B 39, 144, 325, 707, 759
cardiorespiratory: B 472
cold: B 606, 785
heart rate and: T 201, 546
performance under: B 766; T 55, 546
physical: B 14, 94, 140, 244, 339, 455, 724, 735
psychic: B 33, 185, 421, 480, 680, 709
testing: B 198
stroboscopy: B 522
suicide: B 543; T 837
sweat: B 147, 526, 553; T 500
swimmers: B 687; T 588
personality of: T 805, 872
swimming: B 340, 370, 479, 482, 567, 598, 621, 705; T 153d, 198, 228, 255, 415, 606, 607, 614, 633, 636, 827, 832
equipment: B 223
stress, under: B 448, 513

T

task accuracy: B 173, 185; T 643, 862
complexity: B 417
teaching: T 160, 733
methods: B 262, 635; T 26, 58, 88, 100, 134, 143, 174, 307, 377, 426, 447, 504, 575, 593, 603, 631, 665, 693, 743, 864,
see also instructional aids
telemetering: B 74, 246, 414, 684
temperature: B 118; T 680
ambient: B 606
effects on performance: B 786
body: T 389, 500, 848
skin: B 526, 553, 620, 782
water: T 320
tendon: B 164
tennis: B 175, 180, 541, 762; T 57, 97, 115, 234, 273, 293, 331, 418, 474, 584, 632
tensiometer: B 151
tests: *see* measurement
therapy
ice: B 249
play: B 223
thermal response: B 123, 229, 400, 469, 526
throwing: B 450; T 164, 218, 594, 773, 835, 851
tilt table: B 382
track and field: B 511, 684; T 100, 274, 530, 830
training: B 705
circuit: B 391, 738
effects of: B 170, 557, 614; T 15, 62, 172, 190, 217, 253, 317, 432, 472, 482, 491, 523, 524, 580, 596, 818, 847, 854
endurance, and: T 327, 333, 651
heart, and the: B 170; T 21, 312, 481, 564, 602, 655, 867
programs: T 86, 104, 130, 270, 303, 388, 475, 516, 558, 598,

673, 768, 778, 862
transfer of: B 277
work capacity: T 290, 523, 671
see also overload training; physical training; strength training; weight training
trampoline: T 137
transfer effects: B 412, 413, 755; T 653, 664
trauma: B 125, 307
treadmill: B 414
running: B 78, 198, 281
treatment: *see* injuries, care of
trunk: B 113, 726
tuberculosis: B 338, 344, 523, 795
tumbling: B 556

U

urine analysis: T 715, 746

V

vaccines: B 91
rabies: B 465, 639
rubella: B 146
vascular reactions: B 443
values, personal: T 179, 396
velocity: T 298, 584
ball: T 234, 557, 558, 586
ventilation: B 149, 293, 355, 594, 711
in exercise: B 111, 418, 714
vision: B 228, 407; T 33, 171, 283
visual aids: B 237; T 152, 511
vital capacity: B 205, 207
vitamins: B 192, 263, 524
volleyball: B 232; T 421, 857, 858

W

walking: B 46, 241, 481, 509, 577, 578, 788; T 265
warm-up: B 668; T 37, 39, 40, 59, 202, 288, 338
water hazards: B 223
immersion: B 99, 395, 685, 705
treatments, cold: T 557
water polo: T 735
Wear attitude inventory: B 96
weight lifting: T 336
loss: B 250, 335; T 877
training: B 53, 472, 533; T 95, 199, 524, 530, 548, 552, 601, 841
wheat germ oil: T 323
women: B 264, 499
athletic competition: T 111, 128
attitudes of: B 423
endurance of: B 612
physical activity, and: B 208
physical fitness of: B 758; T 153d
work: B 239, 241, 341, 442, 484, 547, 683, 755
capacity: B 21, 205, 206, 372, 446, 503, 504
aerobic: B 313, 337
heat, in: B 47
load: B 230, 256, 473; T 72, 597
muscular work: B 214, 253, 254, 463, 704, 760
aerobic: B 369
underwater: B 314, 756
wrestling: T 120, 516, 534, 553, 624, 847

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PART III—THESES ABSTRACTS

University of Alberta, Edmonton, Canada (M.L. Howell)

1. ASHTON, Thomas Edwin James. *A study of back-lift strength with electrogoniometric analysis of hip angle.* M.Sc. in Physical Education, 1969. 75 p. (M. Singh)

Four methods of measuring back-lift strength were administered to 24 male *S*s. Test A involved the use of the traditional bar and experimental back-lift dynamometer with no restriction of backward lunging. Test B was the same as Test A except a vertical board connected to the back-lift dynamometer was used to prevent backward lunging. Test C involved the use of an experimental shoulder harness and bar, and the experimental back-lift dynamometer with no restriction of backward lunging. *S*s were not allowed to use their arms and hands in any way on Test C, but were instructed to let them hang at their sides. Test D was identical to Test C with the exception of the vertical board to prevent backward lunging. An electrogoniometer was attached to the left hip of each *S* for each test to measure changes in hip angle and the angle at which maximum lift occurred. Analyses of variance did not show significant differences among the means of the maximum scores or the means of the mean scores of trials 2 and 3 for the different tests. A significant relationship was found to exist between back-lift score and the corresponding angle of the hip for Test B, Test C, and Test D. Analyses of variance did not show significant differences among the criterion scores.

2. BOOTH, Marilyn Joyce. *Skinfold measurements as an estimate of specific gravity and of the precentage of body fat.* M.Sc. in Physical Education, 1969. 78 p. (P. Conger)

The accuracy of the skinfold regression formulas for predicting the specific gravity of the human body was tested. The formulas developed by Young and others were applied to data obtained from a group of physical education students. At the .05 level of significance, these formulas did not provide an accurate estimate of the specific gravity of the *S*s. New regression equations were developed in an attempt to provide a more accurate estimate of specific gravity. Eighteen such formulas were obtained. When both the predictive power of the equation and the accessibility of the sites were considered, the weighted combination of the triceps, umbilical, patella, and waist skinfold measurements was the most effective. The specific gravity estimate, obtained by hydrostatic weighing, was used in 3 formulas which had been developed by previous

researchers to estimate the percentage body fat. The 3 formulas yielded estimates of the percentage body fat which were significantly different ($P > .05$) from one another.

3. BROWN, William Cecil. *The effect of phlebotomy on selected physiological parameters.* M.Sc. in Physical Education, 1968. 76 p. (R.B.J. Macnab)

Parameters were elicited by a modified version of the maximal oxygen consumption test described by Mitchell, Sproule, and Chapman. For control purposes, a predonation test was administered within 1 week prior to blood donation (500 cc). Subsequent tests were given at intervals of 4, 8, and 12 days after venesection. Analysis of variance of the physiological data showed that for maximal oxygen uptake: Day 4, Day 8, and Day 12 values did not differ significantly from the control level; and Day 4 and Day 8 values did not differ significantly from each other, but both were significantly less than the Day 12 value. Similarly, for maximal oxygen pulse: Day 8 and Day 12 values did not differ significantly from the control level; the Day 4 value was significantly less than the control level but did not differ significantly from the Day 8 value; and Day 4 and Day 8 values did not differ significantly from each other, but both were significantly less than the Day 12 value. Maximal heart rate did not differ significantly between any of the test days. Analysis of variance and trend analyses showed that recovery heart rate was significantly slower for the control test than for any of the other test days, which did not differ significantly from each other.

4. BRUNT, R. Thomas. *Tortuous liability of Canadian physical education and recreation practitioners.* M.A. in Physical Education, 1969. 132 p. (S. Mendryk)

The purposes of this study were to identify and analyze the principles of case law and statutory law as they affect the Canadian physical education and recreation practitioner, and to record the highlights of all reported related Canadian cases. A review of literature disclosed some errors in previous related studies and also points upon which the interpretation of the courts has been modified and reversed. The relevant principles of law have been interpreted and expressed in statements generally unencumbered by legal terminology. A series of recommendations arising from the study has been incorporated.

5. CARRE, Frank Alexander. *Increasing torque as a kinesthetically dependent variable in short-term memory.* M.A. in Physical Education, 1969. 61 p. (R.B. Wilberg)

The motor task consisted of reproducing a predetermined pressure position by rotating the handle of a crank which compressed a torsion spring producing an increasing torque. The 3 main effects in the 3 x 3 x 2 experimental design were short-term memory (STM), increasing torque, and sensory modality. The main effect factors considered for STM were: immediate recall, delayed recall (10 sec.), and delayed recall with an interpolated task (counting backwards aloud by 3's, from 100, for 10 sec.). The torques were: low – 2½ pound-feet, medium – 5 pound feet, and high – 10 pound-feet. Sensory modality factors were visual (without goggles), and kinesthetic (with goggles). Nine grade 12 SHS Ss were tested under

all 18 conditions. Each condition had 5 randomized replications resulting in 90 trials per *S*. Analysis of variance showed that reproduction accuracy on an increasing torque motor task does not appear to follow the same STM paradigm as for simple verbal tasks. *Ss* seemed to attend to the difference in increasing torque level as an important information source in task reproduction.

6. COSENTINO, Frank. *A history of Canadian football 1909-1968.* M.A. in Physical Education, 1969. 375 p. (M.L. Howell)

Emphasis was placed on rule changes, the style of play as a result of rule changes, and the trend from amateur to professional. The period of time was further broken down into 3 distinct stages: 1909-1924, 1925-1945, 1946-1968. In order to ensure a measure of direction, only those leagues declared eligible by the trustees to compete for the Grey Cup were considered. In 1909, those eligible were: the Canadian Intercollegiate Rugby Football Union, the Ontario Rugby Football Union, and the Interprovincial Rugby Football Union. In 1921, the Western Canada Rugby Football Union was allowed to enter into the competition. In 1934 and 1955, respectively, the Intercollegiate and Ontario unions withdrew from the competition for the Grey Cup. In 1966, the Canadian Football League was awarded the trusteeship of the Cup by the C.R.U., with the latter body changing its name to the Canadian Amateur Football Association. During the period studied, the game of football evolved from a game akin to English rugby to one closely resembling American football. In 1909, it was governed by the prevalent amateur code, whereas in 1968 it was dominated by professionalism.

7. COX, Allan Elton. *A history of sports in Canada 1868-1900.* Ph.D. in Physical Education, 1969. 488 p. (M.L. Howell)

Selected newspapers from the major geographical regions of Canada as well as books and articles written by 19th century authors were used as the principal sources. A brief resume of developments in sports and recreation prior to the post-Confederation period, as well as a summary of the social conditions of the years after Confederation were used to provide a background. Those factors which affected the developing pattern of sports, including the influence of schools and colleges, technological changes and urbanization, were studied. Other factors which were products of the changing role of sport in society, such as the place of women in sport and the new concept of amateurism, were also examined.

8. CRABB, Robert George. *An evaluation of physical education programs for boys in the public secondary schools of Calgary, Alberta, 1968-69.* M.A. in Physical Education, 1969. 134 p. (R.H. Routledge)

All activity phases of the physical education program were examined, as well as the related supporting functions which influenced these programs. Three categories were established according to the grade levels taught in the schools. Questionnaires were mailed to one PE teacher in each of 46 schools which fell into the established categories. SHS's had the highest mean total score, elem-JHS's scored the second highest, and JHS's scored lowest. The overall score for all schools was 56%. The general pattern established by separately ranking the areas of the physical education program and the related supporting functions was identical

for all categories when ranking the areas which scored highest. A consistent pattern of common areas of weakness was not as evident, although some areas of weakness were common to all categories.

9. DANIELSON, Richard Raymond. *The effects of concentric, eccentric and isometric training methods on leg extensor strength.* M.A. in Physical Education, 1969. 127 p. (M. Singh)

Three groups of 10 University of Alberta freshmen participated in and completed a training and testing program over a period of 9 weeks, 7 weeks serving as training sessions. Four tests were given: concentric, eccentric, and isometric strength were measured during each test. During the first 3 training sessions, *S*s executed 6 contractions of the type assigned to their respective groups, and by the 18th training session, they executed 18 training contractions per session. Training occurred on an average of 3 times weekly. Isometric training was most advantageous in improving strength measured concentrically, eccentrically, and isometrically. Specificity of training effects was not observed.

10. DEMEYERE, Patrick Firmin. *Essential factors in the occurrence and the mitigation of occupational deafness.* M.A. in Physical Education, 1969. 168 p. (A.W. Eriksson)

Research on the occurrence of occupational deafness has been limited to fragmented contribution by a few disciplines, such as acoustics, otology, and ergonomics. An investigation model was developed on the basis of the interaction between the management, the labor force, and the authorities who are responsible for occupational health. This triangular basis was expanded to 5 levels; i.e., the individual, the employment, the state, the national, and the international levels. Five more indicators were introduced: participation, roles, general nontechnical causes, specific nontechnical causes, and communication. A series of factors was discussed and proposed for further investigation: conceptualization, responsibility taking, priority to action, standardization, cost to management, employer-employee relationship, interpretation of the work condition by the employee, and contribution of the state health authority.

11. FEDORUK, Dennis E. *An evaluation of two versions of the Sjostrand physical work capacity test.* M.Sc. in Physical Education, 1969. 96 p. (R.B.J. Macnab)

With the Mitchell, Sproule, and Chapman Treadmill Test as the criterion measure of maximal oxygen uptake, the study was designed to investigate the interrelationships of $M\dot{V}O_2$ values determined from the modified Astrand bicycle ergometer technique, and PWC-170 values determined from submaximal efforts on the modified Sjostrand work capacity test and a simulated progressive step test. The experimental group consisted of 24 male and 24 female *S*s randomly selected undergraduate students. *S*s completed 2 treadmill $M\dot{V}O_2$ tests, one bicycle ergometer $M\dot{V}O_2$ test, 2 modified PWC-170 tests, 2 step tests, and an estimate of body density. Results indicated significant differences ($P < .05$) between the criterion test and Astrand $M\dot{V}O_2$ correlations and the correlations of the criterion test and the progressive step test for males and females. Significant differences were found between the interrelationships of the criterion $M\dot{V}O_2$ measures and the mean values of the PWC tests for male *S*s.

12. HENRY, Guy. *Heat build-up and retention in selected types of hockey helmets.* M.A. in Physical Education, 1969. 41 p. (S. Mendryk)

Ten hockey helmets were fitted onto a copper manikin which clamped upright on a laboratory stand. The head was filled with water maintained at the required temperature by a quartz immersion heater and thermister. The helmets were tested at 3 required temperatures and a fan was used to enable each helmet to dissipate heat according to its individual ventilation design. Thermo-couples placed at 6 specified positions registered temperature changes which were recorded on a milivolt potentiometer. The helmets were evaluated on the basis of 2 parameters: the extent of temperature build-up and retention, and the ability to dissipate heat readily. There was significant difference in heat retention and heat dissipating capacities of the 10 helmets. Helmets varied according to temperature and with the effect of the fan. No significant difference between the helmets was found for different temperature readings at the 6 specified positions. The helmets which recorded the lowest temperature build-up and dissipated heat most readily were sparsely insulated and made least contact with the manikin head.

13. HUGHES, M.J. *Visual and kinesthetic short-term memory of a constant weight load.* M.Sc. in Physical Education, 1969. 61 p. (R.B. Wilberg)

The task required *S* to rotate a handle in a clockwise direction until signalled to stop. *S* removed his hand from the handle to the position in which he had left it. The difference between first setting and recall setting was measured in degrees. Each trial was performed under one of 13 combination conditions: 2 sensory modality, 3 short-term memory, and 3 constant weight load. *S* repeated the experiment on 4 separate occasions. Significant *F* ratios ($P < .01$) were found for the sensory modality and short-term memory factors. No significant value was obtained for the constant weight load factor. There was no significant difference in replacement accuracy for the immediate recall or delayed recall conditions of short-term memory. Both these conditions were significantly better than the delayed recall plus interpolated task condition; for each condition of short-term memory replacement accuracy for the visual modality was significantly better than for the kinesthetic modality, and there was no difference in replacement accuracy for the 3 levels of constant weight load.

14. JAMES, Janice. *An interdisciplinary approach to outdoor education and selected program implications for Alberta grade six pupils.* M.A. in Physical Education, 1969. 210 p. (A.W. Eriksson)

The historical rise of school camping in the United States, New South Wales (Australia), and Canada was summarized. Studies related to programing and the effects of the outdoor experience were cited in chronological order. As all program areas included in an approved curriculum are based upon a conceptual structure, this study cited the conceptual learnings in each of the *S*s to be taught at the grade 6 level in Alberta. Using the out-of-doors as the medium of learning, numerous examples were presented of activities which will teach the required concepts at the grade 6 level. Examples of possible testing devices for the purpose of evaluation were cited. Examples of precamp activities suited to the

classroom were included, along with samples of grade 6 school camp programs and sources of pupil work books and teacher guides.

15. JOBLING, Ian Frank. *Effects of training on the oxygen consumption of three types of muscular contraction.* M.A. in Physical Education, 1968. 78 p. (R.B.J. Macnab)

Statistical analysis of the results of oxygen consumption per pound-second revealed that the means of the concentric, eccentric, and isometric contraction groups were significantly different ($P < .01$) from each other. The eccentric contraction group required the least oxygen consumption per pound-second, the concentric group required the most, and the isometric group required less than concentric and more than eccentric. The training program (18 training sessions, 3 per week), did not significantly affect the oxygen consumption per pound-second of any contraction group. Interaction between contraction groups and test periods was not significant in respect to oxygen consumption. Results showed that oxygen consumption did not necessarily increase with an increase in strength, and this applied to all contraction groups.

16. LANSLEY, Keith L. *The contribution of play activities to the survival of traditional culture in four Melanesian societies.* M.A. in Physical Education, 1969. 256 p. (M.L. Howell)

Twelve traditional Melanesian play activities (canoeing, crossing the bridge, hide and seek, spear throwing, top spinning, handball, string figures, music, dancing, swinging, swimming, and finger-games) were analyzed for contribution to the survival of traditional culture in 4 Melanesian societies (Wogeo, Tanga, Goodenough Island, and Manus). Traditional Melanesian play activities (N=118) were collected, classified, and geographically located, and a summary form of this project was made. Schemas for describing culture and determining the conditions necessary for cultural survival were developed to examine possible roles of play in maintaining a traditional culture. Nine of the 12 activities did appear to contribute significantly to the maintenance of at least one aspect of cultural survival. Descriptions of the traditional cultural characteristics of the 4 societies and the play activities practiced in the respective societies were detailed.

17. LAPPAGE, Ronald Sidney. *The effects of exercise upon the skeletal muscle glycogen stores of active and sedentary subjects.* M.A. in Physical Education, 1969. 70 p. (A.W. Taylor).

Significant changes ($P < .05$) for all groups from initial to fatigue glycogen levels were observed on the submaximal test. However, no significant differences were noted between the fatigue and final-resting values. For the initial values a significant difference existed only between the sedentary and active post-training groups, but there was a trend of progressive decrease with the active post-training group having the highest value. For the maximal test only the active post-training and sedentary groups had a significant change in muscle glycogen levels from initial to fatigue values. The other 2 groups experienced small decreases. A significant difference was observed between the initial glycogen levels of the sedentary and active post-training groups. The initial values for the other 2 groups were almost identical, and they differed significantly from the sedentary and active post-training groups. All 4 curves for the submaximal and maximal work loads respectively were similarly shaped.

18. LINDSAY, Peter. *A history of sports in Canada 1807-1867.* Ph.D. in Physical Education, 1969. 433 p. (M.L. Howell)

The development of sporting activities was found to be closely allied with the social, cultural, economic, and technological influences of the period. Thirty-two activities were discussed: curling, hockey, ice sailing, skating, snowshoeing, tobogganing, baseball, boxing, cricket, football, golf, lacrosse, lawn bowling, quoiting, track and field, canoeing, rowing, sailing, swimming, fox hunting, horse racing, ploughing, sleighing, trotting on ice, fishing, hunting, rifle shooting, billards, bowling, gymnastics, handball and racquets–these being grouped as winter, summer, aquatic, equestrian, field, and indoor activities. International competition, sport in schools and colleges, the influence of military garrisons, and woman's place in sport received separate attention; the year 1867 was singled out for detailed presentation to show the total sporting environment at the end of the period.

19. LOVSIN, Joseph L. *Norms of maximal oxygen consumption for university men.* M.A. in Physical Education, 1968. 112 p. (W.D. Smith)

The Astrand Bicycle Ergometer test consisting of a 6-min. work period and a 5-min. rest alternating until exhaustion, was used. During the last minute of each work period a gas sample was taken and analyzed, and heart rate readings were taken for the last 5 sec. of every minute by use of an electrocardiogram. Other parameters considered were: measuring pulse response to fixed work loads; a comparison of the nonsmoking and smoking *Ss* as to maximal oxygen consumption and maximal heart rate; and a comparison of the results of this study to those from other countries completed by Rodahl and others. *Ss* (N=100) were healthy males chosen randomly from first year university students. Observations calculated for the table of norms indicated that the mean and standard deviation for the $\dot{V}O_2$ test expressed in litres/min. was 3.249+.552. Scores ranged from a low of 2.045 to a high of 5.037 L/min. When the XMHR was calculated and a comparison drawn between smokers and nonsmokers, it was found that no significant difference was indicated.

20. McCLEMENTS, James Daniel. *Recall of movement distance and starting position from short-term memory.* M.Sc. in Physical Education, 1969. 48 p. (R.B. Wilberg)

The purpose was to analyze the effect of movement distance and starting quadrant as sources of kinesthetic information on the recall of kinesthetic information from short-term memory. There were 4 factors of interest: sensory modality, period of delay, angular distance, and starting quadrant. The dependent variable was the absolute error between the initial trial and the reproduction trial distances. Input and reproduction trials were performed with a smoothly rotating handle. An increase in the distance to be reproduced caused a decrease in performance accuracy, and a linear relationship between the amount of error and the log (base two) of the distance was found. Recall of visually stored information was superior to recall of kinesthetically stored information.

21. MOLLOY, Geoffrey Neale. *Heart rate response to varied intensities of training.* M.A. in Physical Education, 1969. 41 p. (R.B.J. Macnab)

Employing the Astrand-Ryhming nomogram for the prediction of aerobic capacity, heart rate response to varied intensities of training was deter-

mined. Results indicated that a 30-min. training session, 3 times/ week for 6 weeks resulted in a significant training effect on the exercise heart only if the intensity of training exceeded a rather high level. Presumably, a critical level falls somewhere within a pulse rate range of 125-140 bpm for this sample.

22. MOYST, Victor Herbert. *Visual and kinesthetic short-term memory in a free-moving load system.* M.Sc. in Physical Education, 1969. 57 p. (R.B. Wilberg).

The purpose of this study was to discern which of the available sources of sensory input a performer attends to in perceptual-motor tasks. An assessment was made of the relative importance of visual and kinesthetic short-term memory, the retention accuracy of visual and kinesthetic short-term memory, and the effect which a change in ballistics pressure has on short-term memory. A free-moving-load system apparatus was constructed as a means of testing short-term memory. Visual retention was more accurate than kinesthetic retention in immediate, delayed, and delayed plus interpolated task conditions. A change in ballistic pressure had no effect on the accuracy of short-term memory.

23. MURPHY, Barbara E. *Participation of married women in physical recreational activities as a function of socioeconomic status and family life cycle stage.* M.A. in Physical Education, 1969. 91 p. (A. Affleck)

As many as 68% of married women participate at least once a year whereas less than 37% participate at least once a week in any one activity. The upper stratum participated frequently in more skill-requiring activities. Participation by attending and viewing activities involved very few people, with football and hockey receiving the highest percentage of participation. While participation in physical recreational activities did not appear to be a major interest of married women, it did appear that the upper and middle strata were more involved than the lower stratum. Further analysis indicated that stage in the family life cycle was significantly related to involvement by participation in physical recreational activities. Women in the first 3 stages were similarly high as compared with women in stage 4, who indicated overall lower involvement. It was also found that the activities in which the highest percentage of women participated were those activities which could involve the whole family.

24. REID, John E. *Sports and games in Alberta before 1900.* M.A. in Physical Education, 1969. 93 p. (M.L. Howell)

The development of activities was closely linked with the overall development of the province, and in particular, with the establishment of the railways, telegraph, newspapers, and the settlement of various areas by immigrants from Great Britain, continental Europe, and the United States. Baseball, cricket, soccer, rugby, curling, hockey, rifle shooting, horse racing, tennis, golf, and skating were among the most popular sports. Most of these activities were not introduced until after 1880. Sports were found mainly in areas of greatest population density, generally relied on several individuals for their operation, and were accompanied by wagering in some instances.

25. RICHARDS, Maurice Donald. *A study of the incidences, motive, and cause of ski injuries at Marmot Basin Ski Resort, Jasper National Park, Alberta, Canada.* M.Sc. in Physical Education, 1969. 58 p. (S. Mendryk)

Casualties (N=186) were treated at the resort during the 1968-69 skiing season. The injury rate of skiers at the resort during the 1968-69 skiing season was 33%, which was less than the rate reported in the majority of injury surveys reviewed. The injury rate was noticeably higher during the first 2 months of the skiing season. Two-thirds of all ligamentous injuries occurred to women, and 3 times more women than men were hurt on the beginner slopes. Younger skiers (20 years and under) suffered 3/5ths of the injuries. As the ski day progressed more skiers of low ability were injured on more advanced ski slopes. Heel-toe release bindings were found to be most effective in reducing serious injuries.

26. SANDE, David J. *The influence of two teaching methods on grade one and two pupils performance in selected tests.* M.A. in Physical Education, 1968. 176 p. (W.D. Smith)

Forty grade one and 2 pupils received instruction by the "direct approach," while another group of 40 grade one and 2 pupils received instruction by the "problem-solving approach." Ss were initially tested prior to receiving instruction in physical education after receiving instruction by the above methods. The test battery included results from study on the strength testing machine, the strength stool, the stabilometer, and the CAHPER fitness performance tests. The results were somewhat inconclusive. The grade ones demonstrated significant differences in 2 of the 18 variables, both favoring the problem-solving approach group. For the grade 2 Ss no significant differences between groups were determined for 8 variables, while 10 variables yielded significance favoring the direct approach group.

27. SAWULA, Lorne William. *Physical activities of the Etruscan civilization.* M.A. in Physical Education, 1969. 174 p. (M.L. Howell)

This study attempted to collect, examine, select and verify illustrations of the physical activities of the Etruscan civilization as seen through their archaeological remains and the references of ancient historians. Translations, wherever possible, were taken from the Loeb Classical Library. Illustrations were selected to clarify the activities. Each illustration was briefly described and, wherever possible, the date, origin, present location and sources of reproductions were given. The physical activities were divided into the following groups: music, dancing, gladiatorial contests, javelin, jumping, boxing, discus throwing, running, wrestling, horse racing, chariot racing, hunting and fishing, acrobatics, games, exercise and spectators and stands.

28. SCHNEIDER, Valkmar Erich. *A comparative evaluation of hockey helmets on the basis of selected impact measurements.* M.A. in Physical Education, 1969. 52 p. (S. Mendryk)

The 10 helmets were fitted onto a wooden headform weighing 9.2 lb. and suspended from the ceiling by 2 steel cables. A piezoelectric accelerometer mounted in the headform at a point opposite the point of impact was employed to detect impact effects. The accelerometer's voltage output was amplified and imposed on the screen of a storage oscilloscope.

The resultant tracings took the form of acceleration-time curves and were photographed for permanent records. Two parameters, peak acceleration and kinetic energy, were calculated from the photographed recordings and used to evaluate the hockey helmets. A significant difference between the energy absorbing qualities of the helmets was found. On the whole, no significant difference was found between the front and back positions. In general, the helmet that developed the lowest order of acceleration and dissipated the resultant energy over a broad base in terms of time was one that was constructed out of a rigid shell and utilized a suspension system similar to that found in a football helmet.

29. TAYLOR, Peter Scott. *Some physiologic comparisons of male and female students.* M.Sc. in Physical Education, 1968. 39 p. (R.B.J. Macnab)

Male and female college *S*s underwent a series of tests including: two Mitchell, Sproule, and Chapman $M\dot{V}O_2$ tests, and Astrand bicycle MVO_2 test, two modified Sjostrand PWC-170 tests, two gradational step tests, and body densitometry measures. It was concluded that significant differences ($P < .05$) occurred between the males and females for all the variables studied, including the maximal and submaximal tests in which measures considering fat free body composition were used. In addition, significant differences were found between the Mitchell, Sproule, and Chapman, and the Astrand tests; and between the modified Sjostrand PWC-170 and the gradational PWC-170 step tests, for both the males and females.

30. VELLATHOTTAM, Thomas George. *A history of lacrosse in Canada prior to 1914.* M.A. in Physical Education, 1968. 107 p. (R.G. Glassford)

Lacrosse orginated among some Indian tribes of North America, although it was not possible to establish by what tribe or by whom. The name "Lacrosse" was probably derived either because curved sticks used in the game bore a strong resemblance to a bishop's crosier or because the game resembled an old French game call "La Soule." The length of the stick and the size of the ball varied from tribe to tribe. It was not until 1840 that white men started playing lacrosse, at which time a club was formed in Montreal. The many lacrosse tours made by Canadian clubs to different countries enabled Canada to establish supremacy in the lacrosse world. Canada also won the Olympic lacrosse honors in the 1904 and 1908 Olympic Games. Professionalism, which crept into Canadian lacrosse toward the beginning of the 20th century, increased rapidly, and in 1911 a Professional Lacrosse Union was organized. During the years immediately preceding World War I interest in the game declined considerably and soon it became obvious that Canadian lacrosse was dying. A revival of the national game, however, took place before the war, but only amateur lacrosse survived the war.

31. WANKEL, Leonard Morley. *The interaction of completion and ability levels in the performance and learning of a motor task.* M.A. in Physical Education, 1969. 68 p. (R.B. Alderman)

Grade 8 boys (N=72) were divided into high and low ability groups on the basis of performance on a stabilometer 5-trial pretest. The high and low ability groups were then subdivided to form 36 member control (i.e.,

noncompetitive) and experimental (i.e., competitive) groups for each ability level. Each group performed 25, 20-sec. trials on the stabilometer task under the appropriate test conditions. High ability groups performed consistently better than the low ability groups. Competition did not influence overall performance; however, it had a detrimental effect upon the low ability group's performance during the second stage and a beneficial effect upon the high ability group's performance during the 4th stage. Although learning occurred in all groups, the low ability subjects learned at a faster rate than the high ability *S*s. Competition retarded learning in the early trials and facilitated it in the late trials. In terms of amount of learning, the low ability groups learned significantly more than the high ability groups and the competitive groups learned more than the noncompetitive groups over trials.

32. WATKINS, Glenn G. *The law and games in sixteenth century England.* M.A. in Physical Education, 1969. 64 p. (M.L. Howell)

The regulation and organization of man's games and pastimes by his governing authorities appears to be a recurring feature in history. The attempts of the Tudor governments to dictate to the 16th century Englishman by the imposition of parliamentary statutes and royal proclamations, were examined. Also an investigation of the reasons behind the passing of these laws and their effectiveness was presented. During the early part of the period studied, the government took the initiative in preventing the playing of certain games in an effort to promote archery. By the end of the century government activity in this field appears to have been prompted by moral and mercenary motives rather than military.

33. WELLAND, Edmund James. *The effect of two density ratios and two background ratios on the visual search performance of two achievement groups.* M.Sc. in Physical Education, 1969. 65 p. (R.B. Wilberg)

Visual search performance was considered from both speed and accuracy parameters, and visual search task and apparatus were constructed. *S* received 20 trials, 5 under each of 4 conditions. The above-average achievement group consisted of 8 randomly selected students enrolled in an enrichment class, while the below-average achievement group consisted of 8 randomly selected retarded *S*s. Qualitative as well as quantitative differences existed between the visual search performances of the groups. The effect of an increased density ratio was a greater decrement in the search performance of the below-average achievement group. Increased density of the visual search array caused a decrement in both speed and accuracy parameters of performance of the below-average group. Performance of the above-average group only varied along the speed parameter of performance.

Appalachian State University, Boone, North Carolina (E.T. Turner)

34. DAVIS, Richard T. *A comparative study of two types of recovery during interval training.* M.A. in Physical Education, 1969. 32 p. (E.T. Turner)

Eighteen male college *S*s were divided into 2 equated groups on the basis of pretest performance on the Harvard Step Test. The groups

trained for 5 weeks, 4 day a week for 30 min. a day. Training consisted of repeated sprints up to 220 yd. for both groups. Group A rested after each sprint until their pulse rate returned to 120 beats/min. Group B rested after each sprint for 90 sec. Both groups made significant improvement from the pre-to post-step test trials. Interval training was an effective means of conditioning *S*s who had scored low on the test, and type of interval training did not affect the results.

University of Arkansas, Fayetteville, Arkansas (G.C. Moore)

35. ARRINGTON, Billy Joe. *The effects of regular short periods of exercise with the Exer-Genie exerciser on the cardiovascular condition of selected individuals.* Ed.D. in Physical Education, 1969. 73 p. (G.C. Moore)

Effects of a 7-week program with the Exer-Genie exerciser were investigated using volunteer adults. As compared with a control group, significant changes from T-1 to T-2 were found for cardiovascular measures of resting heart rate, work heart rate, work heart rate and recovery heart rate, and for total fat measures. Backward bend flexibility improved significantly but forward bend and standing bend did not. Bicep girth showed significant improvement but waist girth and chest girth did not.

36. BAIR, Wesley D. *The status of testing in physical education in the large high schools of the Chicago suburban area.* Ed.D. in Physical Education, 1969. 94 p. (G.C. Moore)

A questionnaire was used to collect data from 58 men and 58 women (93.6% return) from 62 Chicago suburban schools with enrollments over 1,400. The status of testing in physical education in these schools was determined with comparisons made between the programs for boys and for girls. In general it was found the men favored and administered physical fitness tests more so than other types while the women utilized knowledge and activity skill tests. There was very little testing of motor ability by either men or women. The most widely used fitness test was the AAHPER Youth Fitness Test. The most widely used motor ability test was the Scott-French Test of Motor Ability. A larger percentage of the women used test results in determining final grades than did the men.

37. BLOHM, Fred. *Running endurance performance as affected by warm-up and varied rest intervals.* Ed.D. in Physical Education, 1969. 71 p. (G.C. Moore)

Mean one-mile times were compared for: no warm-up, warm-up followed by a 6-min. rest, warm-up followed by a 14-min. rest, and warm-up followed by a 22-min. rest. Eleven varsity cross-country runners were *S*s. Results showed significant differences between no warm-up and both the 6-min. and 14-min. rest intervals. Performances following the 14-min. rest interval were significantly better than following the 22-min. rest interval.

38. BROWN, Rex B. *Personality characteristics related to injuries in football.* Ed.D. in Physical Education, 1969. 78 p. (G.C. Moore)
Intercorrelations were computed between personality characteristics, personal variables, and time missed because of injury. The *Ss* were 186 football players from SHS's in Northwest Arkansas. The California Psychological Inventory was used as the measure of personality. Personal variables included age, size, and football experience. A record was kept of the number of game quarters and practice periods missed due to injuries. The findings indicated the injured did not differ significantly from those who were not injured on any of the 18 personality characteristics or any of the personal variables.

39. McCLELLAN, Powell D. *The effects of a preexercise cold shower condition upon heart rates during exercise.* Ed.D. in Physical Education, 1969. 86 p. (G.C. Moore)
Thirty SHS basketball players were exposed to 3 preexercise conditions: control (5 min. of rest), shower (5 min. of cold shower), and exercise-shower (running in place until heart rate exceeded 140, then 5 min. of cold shower). Each of the 3 preexercise conditions was followed by a 10-min. ride on the bicycle ergometer with gradually increasing work load. Heart rate was monitored and recorded during the last 30 sec. of each minute. Conclusions were that heart rate prior to exercise was significantly decreased by either the cold shower or exercise-shower condition. Heart rate during the 10-min. exercise was significantly lower after either the shower or exercise-shower condition, with no significant difference found between shower and exercise-shower conditions.

40. SCOGIN, H. David. *A comparison of swimming performances following selected intensities of warm-up with varied rest intervals.* Ed.D. in Physical Education, 1969. 108 p. (E.T. Hendricks)
Ten college varsity swimmers were used to compare mean times for swimming 100 yd. using the crawl stroke following 7 conditions of warm-up: no warm-up, moderate warm-up with a 2-min. rest interval, moderate warm-up with a 15 min. rest, moderate warm-up with a 30-min. rest, heavy warm-up with a 2-min. rest, heavy warm-up with a 15-min. rest, and heavy warm-up with a 30-min. rest interval. No significant difference in swimming performance was noted when preceded by no warm-up or by any of the moderate or heavy warm-up conditions.

41. SWIFT, Betty M. *A skill test and norms for the speed of the tennis serve.* Ed.D. in Physical Education, 1969. 79 p. (G.C. Moore)
A practical, reliable, and valid skill test for the speed of the tennis serve was developed for college women enrolled in beginning tennis. Norms were developed for Arkansas women. The test devised was scored by the distance the ball rebounded on the serve. Norm tables were established for the test scored in feet of rebound, and also for the test scored by establishing scoring zones for the rebound.

Auburn University, Auburn, Alabama (A.E. Fourier)

42. BARBER, Josephine M. *Amphetamine use among college women.* Ed.D. in Physical Education, 1969. 124 p. (R.K. Means)

A chemically substantiated investigation of the incidences of amphetamine use was conducted among the women's dormitories' resident population (2,804 women). Under double blind conditions, urine specimens were collected around 5:00 AM on 3 unannounced occasions from the participants in a stratified, random sample (N=120) which consisted of 30 each, freshmen, sophomores, juniors, seniors. Three shipments of the collected experimental specimens and control specimens were sent to Kenneth D. Parker, forensic chemist and research toxicologist, the Hine Laboratories, San Francisco, where he conducted his laboratory investigation and utilized his method, "Determination of amphetamine in urine by gas-liquid chromatography and thin-layer chromatography." Of 109 participants present for the first collection, 8.3% had used amphetamine during the latter part of the third week in the quarter; 2.7% of 108 participants in the second collection had used amphetamine over the week-end of the fourth week; and 3.2% of 95 participants had used amphetamine during final examinations. Statistical nonsignificance was revealed for classifications by academic rank, school of enrollment, and collection times.

Ball State University, Muncie, Indiana (R. Korsgaard)

43. HUNTINGTON, George E. *The cardiac stress of badminton participation.* M.A. in Physical Education, 1968. 61 p. (L.H. Getchell)

Three college underclassmen were chosen from physical education classes and were tested 5 times during the 6-week course of badminton. Testing consisted of recording heart rates during badminton participation, using telemetry procedures, and giving *S* a 5-min. step test at the termination of the badminton course. The course produced a limited amount of vigorous activity and cardiovascular stress as determined by electrocardiogram measures. Cardiovascular endurance, as measured by the 5-min. step test, was very poor.

44. JONES, Gary J. *The effects of cross-country endurance bicycling on an individual's physical fitness.* M.A. in Physical Education, 1969. 43 p. (L.H. Getchell)

Changes measured were anthropometric measurements of the arms, legs, chest, and waist; motor ability as measured through the vertical jump and the standing long jump; and cardiovascular efficiency as measured by the resting and working heart rates of each individual. Girth measurement for each individual decreased in all areas of the body. Very little change occurred in jumping ability. Cross-country endurance bicycling tended to decrease an individual's resting and working heart rates. The resting heart rate dropped 29.6 beats/min. and the working heart rate dropped 35 beats/min.

45. SPECKMANN, Richard. *A comparison of cardiorespiratory responses of well-trained, moderately-trained, and sedentary (untrained) middle-aged men.* M.A. in Physical Education, 1968. 42 p. (L.H. Getchell)

The purpose of the study was to compare cardiorespiratory endurance in 3 groups of middle-aged men varying in their physical activity (sedentary, moderately-trained, well-trained). An indirect method of calorimetry was employed to measure maximum oxygen intake while the subjects exercised on a motor-driven treadmill. Heart rates were monitored during the whole bout of exercise, while body fat was estimated prior to the test with the use of skinfold calipers.

46. WINROW, Edward J. *The effects of footgear weight on the energy costs of running.* M.A. in Physical Education, 1969. 33 p. (D.L. Costill)

Five well-trained men participated in 3 submaximal exercise tests at 6.0, 8.5, and 11.0 mph wearing light, medium, and heavy shoes. During each run measurements were made on *Ss* heart rates, expired air, oxygen consumption, oxygen pulse, respiratory exchange ratio, and calorie expenditures. A one-way ANOVA indicated no significant difference among the energy cost of the 3 shoe-weight conditions. An increase in heart rate, ventilation, and calorie requirements was evident with added footgear weight. If this slight change in energy requirements were projected over an exhaustive run of 26.2 miles, the total caloric requirements would differ by about 400 cal.

Boston University, Sargent College of Allied Health Professions, Boston, Massachusetts (B.B. Bullen)

47. DENENBERG, Doralee L. *The effects of exercise on the coronary collateral circulation.* M.S. in Health Dynamics, 1969. 76 p. (H.G. Knuttgen)

Forty Sprague-Dawley adolescent and adults rats, pretrained for 2 weeks on a motor-driven treadmill, were then randomly assigned to groups exercising 5 days, 3 days, and 0 days (controls) a week. Those exercising ran an additional 5 weeks. Remaining animals (N=27) were sacrificed, and each coronary tree perfused with a vinyl acetate polymer. After removal, the casted heart was placed in potassium hydroxide to digest the muscle tissue. The result was the coronary cast. The means for exercised adolescents showed neither cardiac hypertrophy nor an increase in cast weight, although the 5-day group had an increased ratio of coronary cast weight to heart weight—the most meaningful parameter in terms of functional vascularization. In the adult 3-day group, the cast weight and the collateral cast to heart weight ratio were increased, the latter variable being significant ($P < .02$). None of the *F* ratios were significant ($P > .05$).

The University of British Columbia, Vancouver, Canada (S.R. Brown)

48. ARNOLD, Marjorie A. *An evaluation of the curriculum in physical education in eight selected secondary schools.* M.P.E., 1969. 47 p. (R.G. Hindmarch)

A single item attitude questionnaire was given to one eighth grade class and one eleventh grade class in each of 8 schools randomly selected from the Vancouver School District. Structured interviews were conducted with 10 teachers from the 8 schools. It was impossible to make conclusions with any certainty but it appeared that the students had a favorable opinion of physical education, especially when there was student participation in class activity selection.

49. JONES, Brian E. *Comparison of the skating starting styles used in ice hockey.* M.P.E., 1969. 42 p. (P. Mullins)

The purpose was to determine the difference between the front and side styles of starting in ice hockey with respect to time, speed, and acceleration. U.B.C. varsity hockey players (N=16) did 10 trials with each style, skating 60 ft. each trial. The initial 30 ft. and the total 60 ft. of skating were timed. The front style was found to be superior to the side style in time, speed, and acceleration for both the first 30 ft. and the total distance of 60 ft.

50. LAYCOE, Robert R. *The effects of isometric and eccentric strength training programs on isometric leg strength.* M.P.E., 1969. 89 p. (R.G. Marteniuk)

*S*s (N=45) were put into 3 groups, matched according to initial isometric leg strength; one group was a nontraining control group, the second group trained eccentrically, and the third group trained isometrically. The experimental groups trained 3 times/week for 6 weeks. Both the eccentric and isometric groups showed significant increases in isometric leg strength over the controls, but there was no difference between the 2 exercise groups.

51. MACLEAN, Alice C. *The women's intramural program at the University of British Columbia: An evaluation.* M.P.E., 1969. 74 p. (J.B. Pomfret)

Attitudes towards and opinions about the program were obtained by questionnaire and interview from faculty and student administrators of the program and from participating and nonparticipating students. Statistics of participation were also compiled. The philosophy and administration of the program appeared to closely parallel that recommended by the Canadian AHPER, and the total program appeared to be functioning slightly better than the administrators had assumed. There was, however, room for improvement.

52. McDOWELL, Michael T. *Saskatchewan Junior-A hockey and withdrawal rates from high school.* M.P.E., 1969. 147 p. (A.P. Bakogeorge)

The purpose was to compare the withdrawal rate from SHS of Junior-A hockey players with that of the general population, and to assess the affect of the new N.H.L.-C.A.H.A. agreement on the withdrawal rate.

SHS standings of 330 Junior-A hockey players (16-19 years) were investigated both at the Saskatchewan provincial Department of Education and at the players' schools. There was a significant difference ($P < .05$) between the withdrawal rates of the hockey playing *Ss* and the general population for ages 16, 17, and 18 years. In addition, the mean graduation age of players was 1.67 years older than that of the general population. There appeared to be no decrease in the withdrawal rate as a result of the new N.H.L.-C.A.H.A. agreement.

53. MIKI, Kenneth M. *The interrelationships of oxygen intake capacity, strength, body composition, and physical working capacity.* M.P.E., 1969. 180 p. (S.R. Brown)

The multivariate relationships between physical working capacity (PWC-170) and measures of maximal aerobic capacity, strength, and body size (including fat-free weight) were determined, using regression and partial correlation analyses. The meaning and usefulness in statistical multivariate analysis of performance scores divided by body weight and fat-free weight were also investigated. *Ss* were 54 male physical education students. Fat-free weight appeared to be the common factor in the relationships shown between PWC-170 and any of the independent performance variables. Strength of leg extensor muscles – with influences of body size partialled out – appeared to have a small but significant relationship to physical working capacity.

54. STEVENSON, Christopher L. *The reliability of acid-base variables of arterial blood using the Astrup micro-equipment.* M.P.E., 1969. 62 p. (S.R. Brown)

The test-retest reliability coefficients of the values of measurements made on 5 acid-base variables of arterial whole blood were estimated using 30 male *Ss* and a 3-successive-days testing program. The standard bicarbonate and the base excess variables were shown to have the more reliable values and the pH, the PCo_2 and buffer base variables the less reliable values. Only for the buffer base variable was the measurement error variance of the Astrup pH meter shown to be large enough to have a significant effect on the value of the reliability coefficient. The measurement error variances of the Siggaard-Andersen nomogram were small enough to be considered negligible. The measurement error inherent in the time difference between the collection of successive tubes of blood was shown to be statistically significant and of practical importance, especially for *Ss* in an immediate postexercise condition.

55. WENGER, Howard A. *The effect of two different stress stiuations on the performance and learning of a pursuit rotor task.* M.P.E., 1969. 62 p. (R.G. Marteniuk)

Ss (N=30) were randomly assigned to 3 experimental groups: a "directed stress" group, which was promised shock if the performance in any trial was not within 5% of previous best performance; a "nondirected" stress group, which had been promised shock after any of the trials, i.e., randomly; and a control group. All subjects did 20 trials on the pursuit rotor on one day and 10 trials on the next day. Analysis of group scores for Day 1 showed that stress apparently did not influence performance nor was there any apparent difference between the effects of the 2 stress conditions. Groups subjected to stress did, however, show significantly increased learning on Day 2.

56. WHITTAKER, Sharon A. *Individual variations of the phase plane measurements of the brachial pulse wave.* M.P.E., 1969. 105 p. (S.R. Brown)

The purpose was to determine the reproducibility of selected phase plane loop measurements of the brachial pulse wave for possible use in the future assessment of cardiovascular condition. Measurements were taken from photographs of oscilloscope traces for *S*s (N=18) at rest, immediately after a 5-min. stepping exercise, 5 min. postexercise, and 10 min. postexercise. *S*s were tested 4 times. Using analyses of variance and reliability coefficients, it was demonstrated that the between-subjects differences were much larger than the within-subjects differences and that 4 of the 6 selected phase plane loop measurements showed good reproducibility.

Brooklyn College, Brooklyn, New York (N. Doscher)

57. ARONIN, Neal. *Tennis and culture.* M.S. in Physical Education, 1969. 27 p. (N. Doscher)

A questionnaire was sent to philologists for lists of tennis words and phrases that had transferred to ordinary English usage. Compared to other sports like baseball, boxing, football, and horse-racing, there was a minimum of transfer. A study of novels, short stories, and essays was made. In the accidental background of this literature tennis was frequently described and mentioned, but remains an activity of the upper social classes. A long list of books in which sports in general is a background as well as tennis in particular is appended to the study. One of the conclusions was that an anthology of tennis literature would be a contribution to the public understanding of the place of sports in world culture.

58. GOLDSMITH, Barry. *A comparison of whole and part-whole methods of improving juggling and the ability to retain the skill.* M.S. in Physical Education, 1969, 53 p. (N. Doscher)

Sixty SHS male students of a required physical education class were assigned to 2 equal groups using either the whole or part-whole method to learn to juggle 3 balls for 6 days, 12 min./day. Novice jugglers improved their skill by both methods. Training through the whole as opposed to the part-whole method did not appear to be statistically significant in final and delayed test results. A delayed recall test after 33 days of no practice showed a mean increase for both groups, but the results were not statistically significant.

University of California, Berkeley–Berkeley, California (D.B. Van Dalen)

59. BASSIN, Stanley Louis. *The influence of physiological warm-up on various stages of heavy maximal exercise.* Ed.D. in Educational Curriculum – Physical Education, 1969. 57 p. (F.M. Henry)

60. CAPLAN, Calvin Stephen. *The influence of physical fatigue on massed vs. distributed motor learning.* Ed.D. in Educational Curriculum – Physical Education, 1969. 48 p. (F.M. Henry)

61. KING, Shirley P. *The association of selected personality characteristics with college achievement.* Ed.D. in Higher Education – Physical Education, 1969. 124 p. (R.R. McConnell, A.S. Espenschade)

Three groups, intellectually oriented, academically oriented, and both, were tested on the Allport-Vernon-Lindzey Study of Values, the Omnibus Personality Inventory, scholastic aptitude, and grade-point average. The hypothesis that "intellectually" oriented students achieve lower grades than "academically" oriented students was not firmly supported. Certain intellectually oriented students preserve a propensity for liberalism and independence in thinking at the expense of higher grades.

62. CHAPLIN, Leonard Irving. *Changes in pulmonary parameters as a result of physical training.* M.A. in Physical Education, 1969. 37 p. (J.H. Wilmore)

63. KATCH, Victor L. *The role of maximal oxygen intake as a determinant of endurance performance.* M.A. in Physical Education, 1969. 64 p. (J.H. Wilmore)

64. KLINGER, Anne K. *Performance of three- and four-year-olds in selected items of arm and shoulder strength, balance, and jumping.* M.A. in Physical Education, 1969. 114 p. (H.M. Eckert)

Ten arm and shoulder strength, balance, and jumping tests were administered to 30 boys and 30 girls equally divided between the 2 age groups. Significant age differences favored the 4-year-olds in all items but there were no significant sex differences. Static balance items were intercorrelated, as were dynamic balance items, but static and dynamic balance showed little correlation with each other. Arm and shoulder strength, balance, and jumping were not significantly correlated except in those tasks in which weight was a factor. Height and weight were not found to be valid predictors of the number of pull-ups. The preschoolers showed a well-defined factor of general motor ability composed of strength, balance, and jumping.

65. KIRBY, Janet K. *Motor learning and performance in mentally retarded children as related to age and sex.* M.A. in Physical Education, 1969. 52 p. (G.L. Rarick)

The stabilometer was used to test the learning ability of 52 mentally retarded children aged 7 to 16 years. There were no significant differences in initial scores as a function of either age or sex. Significant differences occurred in learning scores as a function of age, with children aged 11½ to 16 years learning more than those aged 7 to 11½ years. The older age group showed significant learning whereas the younger group did not. The children tended to maintain the same relative position throughout testing and those with better initial scores tended to learn the most.

66. MANNING, William George. *Short-term maximal exercise.* M.A. in Physical Education, 1969. 46 p. (J.H. Wilmore)

67. MICHAELIS, William J. *A modified Thurstone scale for measuring attitudes of high school males toward physical activity participation.* M.A. in Physical Education, 1969. 109 p. (G.L. Rarick)

68. WALKER, Martin Roy. *The contribution of the German turnvereins to physical education in San Francisco public schools, 1850-1900.* M.A. in Physical Education, 1968. 84 p. (B.J. Hoepner)

69. WILLIAMS, Leslie Robert Tumoana. *Perceived time of occurrence of two closely-spaced stimuli and refractoriness of a fast movement.* M.A. in Physical Education, 1969. 64 p. (M.L. Norrie)

University of California, Santa Barbara – Santa Barbara, California
(V. Skubic)

70. BONACE, Barbara Jean. *Mirror drawing as a test of basic motor performance.* M.A. in Physical Education, 1969. (V. Skubic)
Forty college women were classified as efficient performers and poor performers. *Ss* were given the Whipple Mirror Drawing Test and a battery of 6 selected sensorimotor tests: Target Test for kinesthesis, Minnesota Rate of Manipulation of manual dexterity, Nine-Hole Steadiness Test, Directionality Test, Guilford-Zimmerman Aptitude Survey for spatial orientation, and the Mexican Ball Toss Test for hand-eye coordination. A comparison was made to determine if a relationship existed between the sensorimotor tests and the Whipple Mirror Drawing Test. Each subject also rated herself according to her self-concept of her motor-performance level as compared to her peers. Significant differences were found between the 2 groups on the following tests: stabilometer, Whipple, kinesthesis, manual dexterity, steadiness, hand-eye coordination, and self-rating scale. It is suggested that the Whipple Mirror Drawing Test is usable in physical education as a screening test to identify the basic motor performance level of students.

71. GARMAN, Judith Fay. *A study of attitudes toward softball competition for women.* M.A. in Physical Education, 1969. (B. Drinkwater)
A softball inventory was administered to players and spectators attending or participating in games of the Southern California Women's Softball League and a sample of the general public in Santa Barbara, California. The softball inventory consisted of: an attitude inventory, a semantic differential, a personal questionnaire, and a preferential scale for selected sports. The attitude inventory consisted of 39 statements representing 2 major categories: general competition and softball competition. Softball inventories (347) were analyzed and it was found that attitudes of players and spectators toward general competition and characteristics of softball were significantly more favorable than those of the general public. Respondents considered individual sports more desirable than team sports for women's participation. The semantic differential showed 7 adjective pairs significantly differentiated between competitors in the

sport considered the most favorable–gymnastics, and least favorable–softball.

72. HACKETT, Penelope Ann. *Physiological parameters related to the selection of a fifteen minute work load.* M.A. in Physical Education, 1969. 75 p. (E.D. Michael)

*S*s were 10 female volunteers, aged 13 to 18, all of whom had prior experience in athletics. *S*'s were timed running on a 440 yd. track. They were instructed to select a pace which they thought they could maintain for 15 min. and be reasonably tired at the end. They then ran on a treadmill and bicycled an ergometer attempting to perform at a pace equal to their 15 min. run on the track. Two trials at these tasks were given. Heart rate, ventilation volumes, and samples of expired air were collected during the 5th, 10th, and 15th min. of exercise on the treadmill and bicycle, and continuously during the first 3 min. recovery, then on alternate minutes between the 3rd and 15th min. of recovery. *S*s selected work levels based on their previous experiences and adjusted the work level so that the RQ approached .90, the heart rate level 170/min., and ventilations at 40 L/min.

73. TAKEMOTO, Jean Hiroko. *Positioning set and interpolated activity in short-term motor memory.* M.A. in Physical Education, 1969. 90 p. (G. Stelmach)

Blindfolded *S*s performed a lever positioning task by moving the lever from a starting position to a stop peg which defined the target. After *S* returned to the starting position, the retention interval began and he either maintained his sitting posture and grip of the lever or released the lever and began the interpolated activity, depending on his assignment to either the activity or nonactivity group. After the retention interval, *S*s attempted to reproduce the given target position. Three trials were given, and each trial included a different target position (105°, 120°, or 135°) and a retention interval of a different length (5, 30, or 60 sec.). Interpolated activity did not interfere nor did it operate to destroy set. The significance of retention intervals indicated that forgetting was a function of time and was independent of activity, and thus supported a trace decay hypothesis in short-term motor forgetting.

Central Missouri State College, Warrensburg, Missouri (M.E. Lyon)

74. DAVIS, Barbara Domann. *An investigation of the relationship between personality traits and majoring or not majoring in physical education.* M.S. in Physical Education, 1969. 71 p. (M.E. Lyon)

S's were 32 freshman and 19 senior physical education majors and 27 freshman and 23 senior nonmajors. *S*s were given the Edwards Personal Preference Schedule. Senior physical education majors possessed the characteristic of heterosexuality to a significantly less degree than did senior nonmajors. Senior nonmajors possessed the characteristic of deference to a greater degree than did freshman nonmajors. The groups were not significantly different in any of the other traits measured.

75. MAYFIELD, Thomas G. *The effect of different areas and landing surfaces upon the performance of elementary school children in the standing broad jump.* M.S. in Physical Education, 1969. 44 p. (M.E. Lyon)

The broad jump was administered to 54 third-grade and 54 fifth-grade students under 6 different conditions to study the possible effects of landing surface and performance area on broad jump scores. The performance areas were a small classroom, a large multipurpose room, and outdoors. The landing surfaces were the tile floor, tumbling mats, and grass. At both grade levels, the area in which the test was performed and the landing surface had a significant effect on broad jump scores.

Central Washington State College, Ellensburg, Washington
(R.N. Irving, Jr.)

76. ACUFF, Arthur C. *An analysis of the fat reducing effects of participation in selected freshman physical education classes.* M.Ed. in Physical Education, 1968. 63 p. (E.A. Irish)

77. ALLEN, Betty J. *Flexibility change in students of modern dance as compared to students in other physical education activity classes.* M.Ed. in Physical Education, 1969. 24 p. (E.A. Irish)

78. AMES, Robert Louis. *Movement response times associated with blocking in football from the three- and four-point center stances.* M.Ed. in Physical Education, 1969. 38 p. (R.N. Irving)

79. BREWER, Everett LoWayne. *An evaluation of the effectiveness of instructional television as applied to learning beginning golf skills.* M.Ed. in Physical Education, 1969. 61 p. (R.N. Irving)

80. DAUGHERTY, Burdon R. *A discriminitive study of boys' physical education in high schools of the Big Eight Athletic Conference.* M.Ed. in Physical Education, 1969. 117 p. (R.N. Irving)

81. ELLIS, Arthur K. *A cross-comparison of the contributions of obstacle course training and extended motor ability development to physical fitness and motor ability.* M.Ed. in Physical Education, 1969. 62 p. (J.G. Nylander)

82. FINNEY, Carol A. *A discriminitive study of girls' physical education in high schools of the Big Eight Athletic Conference.* M.Ed. in Physical Education, 1969. 120 p. (R.N. Irving)

83. GILLESPIE, John. *A study to compare the effect of two elementary physical education programs of physical fitness.* M.Ed. in Physical Education, 1969. 99 p. (E.A. Irish)

84. HALL, Charles. *Effects of sodium phosphate on the performance of track athletes in the 660-yard run.* M.Ed. in Physical Education, 1968. 39 p. (E.A. Irish)

85. HAYNIE, David L. *A comparison of the effects of development of physical fitness and motor skills of two physical education programs with opposite program emphases.* M.Ed. in Physical Education, 1969. 55 p. (R.N. Irving)

86. JACOBS, Kenneth. *A comparison of a routine training program and an Exer-Genie isometric-isotonic conditioning program with respect to their effects on cardiovascular condition and jumping ability.* M.Ed. in Physical Education, 1969. 52 p. (E.A. Irish)

87. KINNAMAN, Ramon. *A study of skill development in single concept activities by the use of videotape.* M.Ed. in Physical Education, 1969. 20 p. (E.A. Irish)

88. LACEY, Patricia. *A comparison of methods of administering modified pull-ups for girls.* M.Ed. in Physical Education, 1969. 26 p. (E.A. Irish)

89. NOLAN, Michael L. *Effects of equal periods of massed exposure versus distributed exposure to systematic exercises on the physical fitness of fifth and sixth grade boys.* M.Ed. in Physical Education, 1969. 82 p. (R.N. Irving)

90. PARSONS, Robert E. *A comparison of the Exer-Genie as a physical conditioning device to traditional methods of exercise.* M.Ed. in Physical Education, 1969. 97 p. (R.N. Irving)

91. WERNER, Robert. *The major factors that have affected the game of basketball since its inception.* M.Ed. in Physical Education, 1969. 61 p. (E.A. Irish)

Chadron State College, Chadron, Nebraska (T.P. Colgate)

92. GRANDSTAFF, Gena. *Grandstaff-Murphy basketball skills test for high school girls.* M.S. in Education, 1969. 76 p. (T.P. Colgate)

The purpose of the study was to develop a valid, reliable, and objective basketball skills test for SHS girls. The conclusion reached was that the Grandstaff-Murphy basketball skills test for high school girls, in its present form, was not a measure of basketball playing ability.

93. GRAY, Roy Russell. *An investigation of faculty load weighting procedures utilized in physical education departments for men in selected colleges and universities.* M.S. in Education, 1968. 106 p. (T.P. Colgate)

The findings indicated that: a wide variation of faculty load weighting practices were utilized by the institutions questioned; less than one-third of the responding institutions had a written faculty load weighting policy; and the credit hour was used more often than any other faculty load weighting policy.

Chico State College, Chico, California (R.K. Cutler)

94. BELL, James W. *Attitudes of selected secondary school boys toward physical education.* M.A. in Physical Education, 1969. 130 p. (R.K. Cutler)

The Wear Attitude Inventory, short form A, was administered to 209 SHS boys. The mean of 113.40 on the inventory indicated that *S*s had a favorable attitude toward PE in general. The boys expressed a significantly more favorable attitude toward the physical values derived from PE than they did toward the general, social, and emotional values. The athletes had significantly more favorable attitudes toward PE than did the nonathletes. The positive attitude group was significantly higher than the negative attitude group in regard to a number of variables.

95 BURLESON, Larry A. *Two types of weight training exercises and their relationship to leg strength development among selected male students at Chico State College, 1968.* M.A. in Physical Education, 1969. 73 p. (R.K. Cutler)

Thirty male college students were administered the Rogers Physical Fitness Index Leg Lift Test, thus providing a leg strength measurement for each *S*. Two equated groups were established on the basis of leg strength. One group was assigned to perform the half squat and the other group the leg press for 11 weeks, following which they were given a post-test. Strength changes occurred in the groups during the training period. The differences on final leg press test and final half squat test results were not statistically significant.

96. BUTCHER, Craig O. *The increased-increment scale as a plan for evaluating performances in junior high school physical ability tests.* M.A. in Physical Education, 1969. (R.K. Cutler)

The purpose of this study was to develop scoring scales for the 6 designated events comprising the Physical Performance Test for California. The increased-increment scoring plan was used as the basis for evaluation of performances of 416 JHS boys. Each scale encompassed a scoring range of +3 standard deviations with 0 points at -3 standard deviations and 100 points at +3 standard deviations. For the final evaluation of performances a grading system based on a 5-standard deviation distribution was utilized.

97. DOBSON, E. Dianne. *The relative effectiveness of two types of tennis racquets in the acquisition of beginning tennis skills for girls in a selected secondary school.* M.A. in Physical Education, 1969. 130 p. (B.L. Raker)

Thirty-nine *S*s trained in a 17-lesson instructional unit and 48 experimental *S*s trained through an identical unit, and 9 lessons using the "Shorty" and 8 lessons using the standard racquet. The instruction was identical for both groups. Hewitt's revision of the Dyer Backboard Tennis Test was used to evaluate performance. A non-significant *T* value was obtained. The pretraining test (control group using standard racquet and experimental group using the "Shorty") yielded a significant *T* in favor of the experimental group. Both groups showed a significant gain in performance level following the training program.

98. ENOCHS, Robert A. *The status of boys intramural sports programs in selected secondary schools of California.* M.A. in Physical Education, 1969. 54 p. (F.R. Reith)

One hundred schools were sent preliminary surveys; 72 responded, with 52 having intramural programs. Only 47 were used in the final analysis, as 5 conducted their intramural program during PE class. Seventy percent of the administrators of the intramural programs had taken at least one class in intramurals in college and 73% had participated in college intramurals. Sixty percent were not satisfied with their programs; 80% felt programs could be improved with better facilities, and 92% could improve programs with more staff help.

99. HART, Edward D. *Relationships between physical fitness test scores, intelligence quotients and grade point averages for selected high school students.* M.A. in Physical Education, 1969. 40 p. (D. Adee)

The average percentile scores obtained on the California Physical Fitness Test were correlated with intelligence quotients and semester grade point averages of the 192 male SHS *Ss*. *Ss* were divided into groups according to class level. There was no significant correlation between physical fitness test scores and intelligence quotients; the correlation between physical fitness test scores and grade point averages for the sophomore, senior, and total groups showed positive but insignificant tendencies; and the junior class obtained an r of -.43 ($P < .057$).

100. HILL, Sandra L. *A comparative investigation of creative and traditional teaching methods in track and field.* M.A. in Physical Education, 1968. 84 p. (B.L. Raker)

The purpose of this study was to evaluate time and distance results in the 50-yd. dash and the high jump of seventh grade girls in an experimental and a control group; to determine the effect of a creative method of teaching in a 9-week track and field unit as compared to the traditional method; and to evaluate creativeness on a subjective basis in terms of skill. No significant difference was found between mean scores of groups taught by 2 different methods in a retest situation in the high jump and 50-yd. dash. Variability increased as a result of creative teaching methods, although net change in performance was neither lost nor gained.

101. JELLISON, Robert Franklin, Jr. *An evaluation of adapted physical education programs in selected California secondary schools.* M.A. in Physical Education, 1969. 58 p. (R. K. Cutler)

Questionnaires were sent to 75 SHS districts listed by the California State Department of Education as having adapted PE programs; 48 responded. The questionnaire was the section of the LaPorte Score Card dealing with adapted PE. The responding California secondary schools scored 23.48 of a possible 30 points. This compared favorably with the national average of 15 on the LaPorte Score Card. The two areas in which the participating institutions scored below the national norms were, available facilities for handling individual cases, and the training of adapted PE teachers.

102. KEEVER, John P. *An analysis of off-season football programs in selected institutions of higher education, 1969.* M.A. in Physical Education, 1969. 76 p. (W. Dawson)

The teams ranked in the top 3 from each NCAA football conference in the United States for 1967 provided data. The results indicated that a high percentage, 128 of the 145 (88.3 %), of the institutions had some type of off-season training program for football. The survey also indicated that the most prevalent areas within these programs were strength, agility and reaction, speed, flexibility, and a testing and evaluation program.

103. McCONNEL, Helen F. *The relationship between California psychological inventory scores and physical fitness test scores for selected secondary school girls.* M.A. in Physical Education, 1969. 66 p. (B.L. Raker)

The Physical Performance Test for California was administered to 333 SHS girls. The California Psychological Inventory was administered to *Ss* who scored in the upper 25% and lower 25% on the fitness test battery. Significant differences ($P < .01$) existed between the personality test scores for the high and low physical performance groups in social presence, self-acceptance, tolerance, sociability, femininity, intellectual efficiency, achievement via conformance, dominance, capacity for status, and communality. Low but significant relationships were found between personality and fitness scores for the low performance group, but no significant relationships were found between fitness and personality scores for the high group.

104. OLIVER, Thomas J. *A survey of the status of obstacle course training in selected high school physical education programs.* M.A. in Physical Education, 1967. 76 p. (R.K. Cutler)

A questionnaire was sent to the 36 public SHS's in the San Gabriel Valley area (30 responded) who were selected for this survey. The information was analyzed in relation to the education and administrative backgrounds of the department chairmen, and the attitudes of the respondents toward obstacle course training in SHS. The findings, conclusions, and recommendations were made in relation to data classified under the more specific areas of preferred obstacle course items; value of obstacle course training as it pertains to the overall physical, emotional, and mental make-up of the individual; and feasibility of obstacle course training as it pertains to the desired objectives and practical administration of the total PE program. The overall result of this survey was that 96.7% of the chairmen were in agreement that obstacle course training could be used as a valuable supplement to the total PE program.

105. PETERICH, Russell E. *Changes in negative attitudes of selected tenth grade boys toward basketball.* M.A. in Physical Education, 1969. 75 p. (W. Simmons)

Ss were 39 tenth grade boys with a definite negative attitude toward basketball. They were given a revised version of a semantic differential test and basketball skills test prior to and after receiving 6 weeks of instruction in fundamental skills involved in basketball. *Ss* showed a significant increase in basketball skill and a definite change from a negative to a positive attitude. *Ss* with a change in attitude from a nega-

tive to a positive response had a higher total score average on the basketball skills test than did *S*s who had no change in attitude.

106. KINT, Bruce E. *A comparison of the effectiveness of lightweight and regulation weight practice balls on basketball free throw shooting accuracy for selected Chico State College males.* M.A. in Physical Education, 1968. 42 p. (C. Maglischo)

A pretest of 50 free throws was given to 50 male college *S*s. Based on the pretest, *S*s were divided into 2 matched groups. The control group shot 300 free throws with a regulation basketball, while the experimental group shot 300 free throws with a lightweight ball. They shot 30 free throws per day, twice a week for 5 weeks. A post-test was then given. Both groups improved equally in shooting accuracy.

107. ROBINSON, Marlene Ann. *The relationship between physical fitness, scholastic achievement, and sports participation among selected secondary school girls.* M.A. in Physical Education, 1969. 67 p. (R.K. Cutler)

*S*s were 248 SHS girls. Physical fitness was determined by the California Physical Performance Test; grade point average for all courses taken for the school year represented scholastic achievement. The total hours of participation in extramurals and intramurals represented the amount of participation in the after-school sports program. When all grade levels were combined, the correlations between all the variables were significant ($P > .01$) except the r between scholastic achievement and participation in intramurals.

108. SANDERSON, Douglas R. *A statistical analysis of the authenticity of the home court advantage theory in intercollegiate basketball.* M.A. in Physical Education, 1969. 60 p. (R.K. Cutler)

Using southern California colleges, 3 factors were analyzed: winning percentage, advantage, and the psychological factor. There was a significant home team advantage in the percentage of games won; the home team had a significant point advantage of approximately 6 points; and the majority of southern California coaches were aware of the home court advantage and altered their coaching techniques accordingly. The conclusion was that the home team nearly always had a better than 50% chance of winning a basketball contest.

109. SCHNEIDER, Duane A. *A mechanical analysis of baseball batting.* M.A. in Physical Education, 1969. 90 p. (F. Reith)

The purposes of this study were to analyze the fundamental positions and movements involved in baseball batting employed by selected professional baseball coaches; to compare these fundamental positions and movements; and to recommend those which are taught by the majority of coaches. The method of investigation used was the library research method. A check list was used containing 76 items pertaining to the positions and movements involved in batting. As an article was read the items on the list were checked off according to what the author had to say about them. The opinions of 36 authors, referred to as "experts," were included in the study. There was significant agreement on about 80% of the items. It was concluded that in order to be a good hitter, a batter should develop a fast bat swing and eliminate all unnecessary movements.

110. SERAFIN, J. Mario. *An analysis of selected lower division professional physical education teacher preparation course equivalents at Shasta College and Chico State College.* M.A. in Physical Education, 1968. 55 p. (R.K. Cutler)

The normative-survey and personal interview methods of investigation were used. A check list was made containing the proposed course equivalents at both institutions and the check list was then presented to a jury of experts. It was concluded that: a check list of this type can be made between a junior college and state college; transfering of units and courses can be made from a junior college to a state college without a setback in the suggested course programs of the colleges; and Shasta College required course offerings satisfy all lower division professional teacher education requirements for men in PE at Chico State College except for ballroom dance, square dance, social recreation skills, and boxing.

111. SHERRIFF, Marie C. *The status of female athletes as viewed by selected peers and parents in certain high schools of Central California.* M.A. in Physical Education, 1969. 115 p. (R. K. Cutler)

Through use of the broad survey and statistical analysis of methods the following conclusions were drawn: generally all respondents, urban and rural, were undecided about female athletic competition; however, 95% thought girls and women should have opportunities to compete; both parents and female respondents had more favorable attitudes toward female athletic competition, including urbanites and ruralites; the female athlete was socially accepted by both parents and peers, urbanites and ruralites; the observation of female athletic competition affected the attitudes of respondents as those who were spectators of female athletic competition had more favorable attitudes toward such competition–especially toward the physical development of female athletes and toward their social acceptance; and there were no significant differences between the attitudes of urbanites and ruralites within the subgroups in these categories.

112. SWEENEY, Colleen. *The development of scoring scales for the evaluation of performances in a selected physical ability test for secondary school girls.* M.A. in Physical Education, 1969. 66 p. (R.K. Cutler)

The increased increment scoring plan was used as the basis for evaluation of performances of 323 eleventh and twelfth grade girls. Each scale encompassed a scoring range of+3 standard deviations with 0 points at -3 standard deviations and 100 points at+3 standard deviations. For the final evaluation of performances, a grading scheme based on a 5-standard deviation distribution was utilized.

113. VARGA, Alex. *The status of gymnastics in selected secondary schools of Napa and Sonoma Counties, California.* M.A. in Physical Education, 1969. 51 p. (F. Reith)

Of 153 questionnaires mailed, 105 usable replies were returned. One of the major deficiencies noted was the inadequate gymnastic backgrounds of the respondents. Over half of the respondents had no gymnastic backgrounds and the rest had very little experience. Gymnastics were

more often incorporated into girls' than boys' PE classes. Limited facilities and equipment proved to be the greatest hindrance in the establishment of a gymnastic program. Those teachers who had some equipment were hindered by conflicting programing and lack of teaching stations. In order of importance the reasons for the lack of gymnastic programs were: lack of facilities, lack of equipment, and lack of qualified staff for gymnastics.

Drake University, Des Moines, Iowa (N. Tremble)

114. CRAMER, Carolyn Ann. *John Dewey's view of experience for education: Implications for physical education.* M.S. in Physical Education, 1969. 47 p. (C. Heilman)

115. HOTH, Sandra. *Predictive validity of the basketball throw for distance test as a measure of potential tennis playing ability in college women.* M.S. in Physical Education, 1969. 51 p. (C. Heilman)

116. MERKEL, Robert. *A comparison of mental ability and scholastic achievement of female athletes and nonathletes.* M.S. in Physical Education, 1969. 26 p. (N. Tremble)

117. NULL, Richard. *High school sports participation of basketball players from five midwest intercollegiate conferences, 1968-69.* M.S. in Physical Education, 1969. 55 p. (C. Heilman)

118. SHISSEL, Janet. *A comparative analysis of the influences of cultural and social patterns on dance, games, and sports of Mexico and the Philippines.* M.S. in Physical Education, 1969. 92 p. (C. Snell)

119. TAYLOR, Harriet. *The organization and function of the division for girls and women's sports in the fifty states, 1969.* M.S. in Physical Education, 1969. 125 p. (C. Heilman)

120. TIMMERMAN, Lonnie D. *A quantitative analysis of participants in the Iowa High School Athletic Association wrestling weight classification as measured in the eighty Class AA schools.* M.S. in Physical Education, 1969. 40 p. (C. Heilman)

Eastern Illinois University, Charleston, Illinois (W.S. Lowell)

121. BELL, Charles E. *A study of the equity of competition within the Eastern Illinois Conference.* M.S. in Physical Education, 1969. 65 p. (M. T. Woodall)

The purpose of the study was to determine the factors of equality of interscholastic athletic competition. The won-loss records of the 10 SHS's in the Eastern Illinois Conference were analyzed for the period

1964-69. The rho technique was used as the statistic to obtain rank difference correlations. There were 3 sports that all 10 schools participated in: football, basketball, and track. During the 5-year period, schools with larger enrollments defeated schools with smaller enrollments in the sports at a significant rate.

122. BUTLER, Ben C. *An analysis of personal characteristics as motivating factors that influenced selecting a particular site for canoeing.* M.S. in Education, 1969. 43 p. (W.S. Lowell)

This study was an attempt to determine factors which influenced people to select and participate in a back country canoe trip during the summer of 1957. A completed questionnaire was received from canoeists before they started a trip. The survey was processed and contingency tables were prepared to determine relationships between the 13 questions of the survey. Areas studied were sex, age, experience, formal instruction, size of high school, location, and one question that required a sentence-type answer (why they selected the area.)

123. FERGUSON, Dennis R. *An investigation of the methods used in high school football for the prevention of ankle sprains.* M.S. in Education, 1969. 50 p. (W. Buckellew)

The methods studied were taping of ankles and exercising of ankle. Data were obtained from a 9-item questionnaire which was returned by 68 schools after the 1968 season. 2,597 varsity football players were represented in the study. No significant difference was found between the 2 methods in number or severity of sprain.

124. HAWKINS, Robert L. *A comparison of the status of health and physical education programs of two groups of high schools in Illinois.* M.S. in Physical Education, 1969. 33 p. (R.A. Carey)

The purpose of the study was to evaluate boys' PE programs in Illinois with the use of the Health and Physical Education Score Card No. II. Fifty public high schools were selected at random and then divided into 2 groups for comparison: enrollment over 1,000 pupils and enrollment less than 1,000 pupils. The group of schools with the larger enrollments scored a higher mean in all areas. The highest score for most schools in the study was in Area IV, locker and shower area.

125. KOBAYASHI, Yoshio. *The effect of rope jumping on cardiorespiratory fitness of high school students.* M.S. in Physical Education, 1969. 74 p. (M. Woodall)

The purpose of the study was to determine the effects of an 8-week rope jumping program on the cardiorespiratory fitness of 13 male nonathlete SHS students. Each skipped rope 5 min. daily in 35 training sessions. Oxygen consumption and heart rate were studied with the use of a treadmill run. The *t* test was used to determine significance between pre- and post-testing means. It was found that rope skipping improved cardiorespiratory fitness.

East Stroudsburg State College, East Stroudsburg, Pennsylvania
(J.R. Felshin)

126. BAILEY, Bette. *The relationship of the academic ability to motor educability and motor fitness of fifth and sixth grade girls.* M.Ed. in Health and Physical Education, 1969. 46 p. (L. E. Evans)

127. BALDUCCI, Mary Sue. *The prediction of the normal weights of fifteen- and seventeen-year-old girls by means of selected anthropometric measurements.* M.Ed. in Health and Physical Education, 1969. 65 p. (F.D. Sills)

128. FAUST, Dolores. *A comparative study of the actual and projected attitudes toward high school girl participants in varsity team sports.* M.Ed. in Health and Physical Education, 1969. 49 p. (J.R. Felshin)

129. KAUFMANN, Katherine. *Physical performance of children taught by the professionally prepared teachers of physical education and classroom teachers.* M.Ed. in Health and Physical Education, 1969. 27 p. (C.P. Wolbers)

130. MIHALOVICS, Lajos. *The effect of artificial drag and load on the performance of the 220-yard run.* M.Ed. in Health and Physical Education, 1969. 42 p. (H. Weber)

131. ROMANO, Joseph J. *The relationship of strength and fatigue to accuracy in the tennis serve.* M.Ed. in Health and Physical Education, 1969. 36 p. (C.P. Wolbers)

132. SHOLLENBERGER, Allen. *The effectiveness of foul shooting practice in relationship to rated reaction under pressure.* M.Ed. in Health and Physical Education, 1969. 28 p. (G.F. Ockershausen)

133. WESTON, Elsie. *The relationship of selected anthropometric measurements and somatotype to the performance of a battery of agility tests for girls and boys ten years old.* M.Ed. in Health and Physical Education, 1969. 30 p. (C.P. Wolbers)

134. WIEDER, Donald. *Illustrated progressive contact spotting and teaching techniques for selected skills on the horizontal bar.* M.Ed. in Health and Physical Education, 1969. 124 p. (E.L. Shay)

135. WOOD, John M. *The status of health education in New Jersey's public secondary schools.* M.Ed. in Health and Physical Education, 1969. 110 p. (G.E. Ockershausen)

University of Florida, Gainesville, Florida (C.A. Boyd)

136. HARRISON, Edward Roy. *A test to measure basketball ability for boys.* M.A. in Physical Education and Health, 1969. 50 p. (W.R. Williams)

Validity and reliability of a battery of 4 basketball skill tests for PE class use which would require a minimum length of time to administer were determined. Tables of norms for each test were developed for boys in grades 7-10. Boys from each grade (N=100) and 23 members of a varsity basketball team were administered the proposed battery consisting of a field goal test, a speed pass test, a dribble test, and a rebound test. Using the test-retest method, reliability coefficients for the battery ranged from .91 to .97, and reliability coefficients for the individual tests ranged from .72 to .96. A validity coefficient of .89 was determined by comparison of the proposed basketball battery with a mean rating of 3 criteria consisting of a previously validated battery, a peer rating, and a jury rating. The proposed basketball skill test battery was considered to be valid and reliable.

137. RUMPF, John F. *Incidence and seriousness of trampoline accidents in secondary schools: A multi-regional survey.* M.A. in Physical Education and Health, 1969. 77 p. (C.W. Zauner)

This study investigated the incidence, resultant injuries, and prevalent causes of trampoline accidents in 173 SHS's. Almost 89% of the 1,569 accidents reported required one to 8 days for complete recovery. Sprains, strains, and mat burns accounted for 92% of the injuries reported. There were 2 cases of paralysis reported, one of which ended in death. The front drop, back somersault, and front somersault, in that order, seemed to cause the most problems. The majority of responding teachers favored the trampoline as a PE activity and believed it to be relatively safe. Six respondents indicated that trampolining had been dropped from their school programs due to past injuries.

Florida State University, Tallahassee, Florida (P.W. Everett)

138. BARRY, Patricia E. *Use of the videotape recorder in teaching the free throw and lay-up shots in basketball to college women.* M.S. in Physical Education, 1969. 59 p. (F. Hall)

139. BEHLING, Mary Alice. *The development of a screening program for the selection and retention of women physical education major students.* Ph.D. in Physical Education, 1969. 100 p. (P.W. Everett)

Personal and professional characteristics of successful physical educators were identified from the literature. The following tools were used to measure these characteristics: Scholastic Aptitude Test–verbal, Scholastic Aptitude Test–quantitative, Edwards Personal Preference Schedule, Minnesota Teacher Attitude Inventory, and Newton Motor Ability Test. Scores from those measurements were used as predictors.

The criterion or "success" measure consisted of a rating of the *S* by a 5-woman faculty rating committee combined with the *Ss'* grade point average for the junior year. After comparing scores obtained from predictors with the criterion, scholarship, personality, and motor ability were found to show a significant relationship, whereas attitude did not. Numerous multiple linear regression equations were run on the data in an attempt to find the "best model" to be used for the purpose of predicting success as professional students. All characteristics including attitude entered into the final restricted multiple linear regression model containing 13 predictors which proved to be significant ($P < .01$).

140. BROWNING, Freddie Melton. *A comparison of sprint and distance runners on selected anatomical and physiological parameters.* Ph.D. in Physical Education, 1969. 145 p. (P. W. Everett)

Sixteen volunteers of the 1968 Florida State University track squad were divided into 2 groups: sprint group—100 to 440 yd. men, and distance group—880- to 2-mile men. *Ss* reported to the physiology of exercise laboratory for 4 testing sessions in which 40 parameters were measured. The sprint group had significantly larger means than the distance group on weight, heart rate recovery ½ t-time following the sprint work bout, resting diastolic blood pressure preceding maximal work bout, maximal recovery systolic blood pressure following the endurance work bout, and minimal recovery diastolic blood pressure following the endurance work bout. The distance men had a larger mean performance time of the endurance work bout. Significant correlations were obtained between the coach's rank and the event rank; total work performed during the endurance work bout and the coach's rank; total work performed during the endurance work bout and the event rank; hand response time and event rank; hand response time and preferred foot response time; and total extensor strength and total flexor strength.

141. CHRIETZBERG, Agnes L. *The relationship between maternal guidance during motor performance and the motor skill of preschool children.* Ph.D. in Physical Education, 1969. 107 p. (K.D. Miller)

Motor performance situations were devised in which lower class mothers were instructed to guide and control the performances of their 3-year-old children in 4 relatively difficult motor tasks. Mother-child pairs (N=20) were videotaped in the situations, and interactions between mothers and children were categorized. Relationships were sought between mother and child behavior variables, and between all behavioral variables and the level of motor skill exhibited by the children. Mothers were found to exert substantial influence over their children's motor performance, i.e., they were able to elicit high frequencies of performance in the motor tasks and to inhibit the performance of irrelevant motor activity. Children's level of motor skill was found to be significantly related to their cooperation, frequency of performance, and to their inclination to imitate task models provided by their mothers. Significant relationships were also found between children's level of motor skill and the frequency with which mothers provided information regarding the quality of motor performance attempts.

142. CREEKMORE, Walter. *The effect of a diagnostically designed recreation program on performance in selected areas of functioning of mentally retarded persons in an institutional setting.* M.S. in Recreation, 1969. 80 p. (F.C. Cannon)

Moderately retarded males (N=18), aged 13, were pretested with the Florida State University Diagnostic Battery of Recreative Functioning for the Trainable Mentally Retarded. Battery pretest scores were used to determine recreative functioning strengths and weaknesses of each *S*. *S*s were placed in 3 groups according to battery scores, physical handicaps, and physical sizes. Control Group II was composed of 6 *S*s who participated in the traditional recreation program with 44 other residents. The leadership ratio in this group was one to 50. Control Group I was composed of 6 *S*s who participated in the traditional recreation program with a leader ratio of one to 3. The experimental group consisted of 6 *S*s with 2 leaders and was presented a diagnostically designed recreation program for 8 weeks. The battery was administered as the post-test. ANOVA was used to determine if there was any significant change in the 48 subsections of the battery. The lower the leader-to-participant ratio, the more effective the traditional recreation program was in raising scores on 11 subsections. The experimental group scored significantly higher on 6 subsections on post-testing than did the control group.

143. DOWNIN, Jean E. *A comparison of activity experienced by second grade children when taught by movement exploration and traditional physical education programs.* M.S. in Physical Education, 1969. 118 p. (M.V. Alexander)

Four sections of second grade students at 2 elementary schools were watched by trained observers to compare traditional teaching-learning methods with the movement exploration approach in PE. The 2 observers watched the same *S* for five 10-sec. intervals, independently recording *S*'s behavior. This was done according to 5 categories: active on-task behavior, passive on-task behavior, self-distracted off-task behavior, distracting others off-task behavior, and waiting a turn. It was concluded that students experienced more active on-task behavior and they were self-distracted more often in the movement exploration approach. They experienced more passive on-task participation in the traditional teaching method. There was no significant difference in the 2 teaching methods when comparing the amount of time students distracted peers. The fifth category, waiting a turn, was not used enough times to be considered with the other categories. There was significant difference in the amount and type of activity experienced by all groups in the 2 teaching methods.

144. DUNN, Barbara Ann. *A study of the leisure pursuits of the Florida State University and Florida Agricultural and Mechanical University students undergoing vocational rehabilitation.* M.S. in Recreation, 1969. 68 p. (F.C. Cannon)

In addition to completing an information sheet, 98 *S*s reported their use of time for one week on time report forms. For purposes of analysis, the items on the forms were placed into leisure categories of religious activities, university sponsored activities, television, reading, rest and relaxation, movies, social activities, table games, music participation, listening to music, participation sports and physical activities, spectator

sports and physical activities, volunteer work, hobbies, and miscellaneous recreation. The categories were then analyzed according to the time the pursuit occurred, weekend or weekday. Conclusions indicated that each *S* had some time for leisure, and they had more time for leisure on the weekend than on weekdays. The most frequently mentioned activities and the activities in which the most time was spent were noncompetitive, inactive, inexpensive pursuits requiring little equipment or leadership. When compared with other studies, this group of disabled students appeared to be similar in its use of leisure to the use of leisure of nondisabled students.

145. EASTMAN, Norris W. *The effect of two exercise training programs on selected morphological and physiological measurements of male albino rats.* Ph.D. in Physical Education, 1969. 115 p. (P.W. Everett)

Mature male Sprague-Dawley albino rats were randomly assigned to control, interval running training, and continuous running training groups. The exercise groups performed forced treadmill exercise of increasing speed and duration for 4 weeks. At the end of this time all rats were weighed, exposed to a forced swimming task of 30 min., and sacrificed by injection of nembutal. The adrenals and hearts were weighed immediately on a torsion balance; blood samples were analyzed for sugar using the Nelson Modification of the Somygi Method; and muscle tissue was measured for glycogen content using the Anthrone Technique (Roe). One-way ANOVA revealed no significant differences among the 3 groups for blood sugar, heart weight, or muscle glycogen measurements. A significant difference was found for adrenal weight between the control group and each of the exercise groups, but there was no difference between the 2 exercise groups.

146. JARRETT, Lincoln R., Jr. *A theoretical model for a physical education curriculum in the middle school.* M.S. in Physical Education, 1969. 169 p. (J. Wells)

Three major areas related to the middle school were isolated for study: the middle school concept and the reasons for its emergence; the growth and developmental changes particular to students in this group; and PE education in the middle school. The inquiry resulted in the development of a theoretical curriculum model for a middle school PE program which represents the full range of forces focused on youth to develop a positive view of self through movement. The application of this theory to practice is the next logical step with observation of data as to its effectiveness over more traditional PE programs.

147. JOHNSTON, Bower L., Jr. *A study of the relationships among self-concept, movement concept, and physical fitness, and the effects of a physical conditioning program and a sports-skill program upon self-concept and movement concept.* Ed.D. in Physical Education, 1969. 63 p. (K.D. Miller)

Male college freshmen (N=53) were administered *Q* sorts to measure self-concept, and the McCloy Strength Test to assess physical fitness. The scores on these variables were correlated to investigate relationships among them. Male college freshmen (N=73) of low and average physical fitness were divided randomly into 3 subgroups, one participating in a

physical conditioning program; one in a sports-skill program; and a third as a control. After 12 weeks the 3 groups were given *Q* sorts for self-concept and movement concept. A low but significant relationship ($P < .05$) was found between self-concept and movement concept. No significant relationships were found between self-concept and physical fitness or between movement concept and physical fitness. No significant differences were determined among the self-concept and movement concept post-treatment means of the experimental and control groups.

148. MOFFETT, Harry and MOFFETT, Linda Odum. *The effect of a diagnostically designed program on the recreative functioning level of the trainable mentally retarded child.* M.S. in Recreation, 1969. 90 p. (F.C. Cannon)

The Florida State University Diagnostic Battery of Recreative Functioning for the Trainable Mentally Retarded was employed. *Ss* (N=53) met the following qualifications: chronological ages 8-15; IQ's 30-55; psychological testing no earlier than January 1, 1963; and no previous contact with the battery. While performing selected activities, *Ss* were observed and rated by a panel of 3 judges. The battery was administered as the pretest to *Ss*; 16 *Ss* were retested; the remaining 37 *Ss*' scores were ranked, 8 homogeneous groups were formed, and they were randomly designated as: experimental–meeting 2 days/week; experimental–meeting 4 days/week; control–meeting 2 days/week; or control–meeting 4 days/week. Group meetings were for one hour. Pretesting results were used to diagnostically design the recreation program. It was conducted for 5 consecutive weeks for the experimental groups, while the control groups received the regular recreation program supervised by the investigators. *Ss* were postjudged and post-tested as in the prejudging and pretesting. Conclusions were that the test-retest group showed the battery to be reliable; the diagnostically designed recreation program was effective in raising the recreative functioning level of these trainable mentally retarded; and the battery did test recreative functioning level.

149. MULLINS, Martha. *Attitudes toward multidimensional physical activity as a function of race, sex, and socioeconomic level.* Ph.D. in Physical Education, 1969. 125 p. (K.D. Miller)

Ss were 190 Tallahassee Junior College students classified by race (Negro, white), sex, and socioeconomic level. SEL was determined from the range of scores calculated from Hollingshead's Two Factor Index of Social Position. Attitudes toward physical activity were measured with ATPA Scales: Form D. ANOVA results indicated that ATPA as social experience, pursuit of vertigo, and aesthetic experience were a function of race. ATPA for health and fitness and as ascetic experience were differentiated by sex. No significance for the main effect of SEL emerged. However, significant interaction of SEL and race occurred in ATPA as pursuit of vertigo and as aesthetic experience. Generally, Negro *Ss* displayed more positive ATPA than white *Ss*; males had more favorable reactions than females. The most negative group response was in ATPA as pursuit of vertigo; only white males demonstrated positive attitude. Age was not a significant covariate with the 3 factors.

150. SEWELL, Norma Fewell. *Sequential recreative activities suggested for use in the development of body image and body position in space.* M.S. in Recreation, 1969. 138 p. (F.C. Cannon)
A 16-step sequence for the formation of body image and body position in space developed by Cratty was used. Activities were selected, modified, or created to emphasize the learning required in each of Cratty's steps. Eighty-three activities were submitted to a panel of judges for evaluation to insure that each activity emphasized the learning required in Cratty's sequence and were practicable for use with children aged 6 to 8. Guided by suggestions and comments of the panel of judges, 24 activities were revised. New activities were created to replace 3 activities rejected by the panel of judges. Revision of activities continued until a minimum of 5 activities were accepted by the panel of judges for each step in Cratty's sequence. Eighty-three sequential recreative activities suggested for use in the development of body image and body position in space were eventually accepted by the panel of judges.

151. STEINBRECHER, William L. *Changes in the blood lactate concentration of chronic smokers as a result of abstaining from smoking before and after an exercise training program.* Ed.D. in Physical Education, 1969. 71 p. (P.W. Everett)
Pre- and post-exercise lactic acid determinations were made on chronic smokers on days they smoked as usual, and on days they abstained from smoking for at least 12 hours. Following a 6-week training program during which time *S*s practiced the step-test exercise 4 times weekly, pre- and post-exercise measurements were repeated for both conditions, smoking and abstaining. No differences were observed in either the mean pre-exercise or post-exercise blood lactic acid concentrations as a result of a period of abstinence of at least 12 hours both prior to and following the training program. Training had no significant effect on either pre-exercise or post-exercise blood lactic acid concentrations for either condition, nor did it influence the mean difference between pre-exercise and post-exercise blood lactic acid concentrations for either condition.

152. THOMAS, Richard A. *The use of a visual device in teaching the downswing in golf.* Ph.D. in Physical Education, 1969. 71 p. (K.D. Miller)
The effectiveness of the visual perception Y-Swing Mat as an instructional aid in comparison to a conventional method of teaching the downswing to 20 college men and 20 college women was investigated. After 8 weeks of instruction, each *S* hit 10 golf balls using both the 5-iron and the 9-iron on 3 consecutive days. The resulting angular deviations were computed by means of a plane table and open sight alidade and constituted the criterion for evaluation. A one-way ANOVA revealed a significant difference ($P < .01$) favoring the experimental group in both the 5-iron and 9-iron when using the Y-Swing Mat.

153. WIDMANN, Robert H. *A study of the relationship between perceptual accuracy and coaching effectiveness.* Ed.D. in Physical Education, 1969. 107 p. (K.D. Miller)
Basketball coaches and their teams in cities in Georgia with populations over 25,000 were utilized as *S*s. Data were collected from the records

of the coaches and separated into 2 groups: those coaches with a minimum of 3 years of head coaching at their present school, and all coaches surveyed regardless of the duration spent in their present school. Stephenson's *Q*-technique was utilized to compute an index of perceptual accuracy between the basketball coach and 6 of his best players. The *Q* sort material perceived by the coach concerned the way his players would rank statements about him as an individual. The data for the 3-year-experience group yielded a significant difference between the perceptual accuracy of winning coaches and losing coaches when a separation was made at 51% or better wins and 49% or less wins. There was no significant difference when the separation of 70 and 30% was employed. When the data for all coaches, regardless of experience, were analyzed for differences in perceptual accuracy, no significant differences were indicated with duration or effectiveness as the comparison criteria.

University of Illinois, Urbana, Illinois (A.W. Hubbard)

153 a. ALLARD, Denise P. *The relationship between the heartograph and the ballistocardiograph in adult men.* M.S. in Physical Education, 1969. 177 p. (T.K. Cureton)

153 b. AL-TALIB, Nizar M. *Attitude: Consonant or dissonant role playing with high or low justification.* Ph.D. in Physical Education, 1969. 95 p. (A.W. Hubbard)

153 c. AMBUEHL, Jeraldine. *Norms of flexibility of adult women in nine selected joints of the body.* M.S. in Physical Education, 1969. 72 p. (R.H. Pohndorf)

153 d. BABKA, Jane Ellen. *Effects of swimming and basic movement on selected measures of fitness in college women.* M.S. in Physical Education, 1969. 63 p. (B.D. Franks)

154. BARTLETT, George Robert. *An evaluation of the State of Illinois driver's license examination.* M.S. in Health Education, 1969. 108 p. (A.E. Florio)

155. BERGTHOLDT, Harry T. *Prediction of peak oxygen intake from selected fitness variables.* M.S. in Physical Education, 1969. 114 p. (B.D. Franks)

156. BERTHOFF, Cynthia T. *A history of recreation and athletics for disabled students at the University of Illinois.* M.S. in Recreation, 1969. 55 p. (M.V. Frye)

157. BROWN, James David. *Psychophysiological measures of drivers under actual conditions.* Ph.D. in Health Education, 1969. 90 p. (W.J. Huffman)

158. CARLS, E. Glenn. *A study of social motives and patterns of leisure behavior.* M.S. in Recreation, 1969. 104 p. (D.W. Bishop)

159. CARRIERE, Diane L. *An objective figure skating test for use in beginning classes.* M.S. in Physical Education, 1969. 59 p. (A.W. Hubbard)

160. CASE, Robert L. *An analysis of the communication structure of a university administrative and instructional unit.* Ph.D. in Physical Education, 1969. 137 p. (E.F. Zeigler)

161. CLARK, Frederick Arthur, Jr. *Seniors' evaluation of Illinois driver education program.* M.S. in Health Education, 1969. 114 p. (W.J. Huffman)

162. CLARK, Vernon L. *A history of intercollegiate football at Norfolk State College, Norfolk, Virginia, 1935-1967.* M.S. in Physical Education, 1969. 144 p. (E.F. Zeigler and M. Trekell)

163. CONLEY, John Arthur. *The construction and testing of a new written driver's license examination for the State of Illinois.* Ph.D. in Health Education, 1969. 84 p. (W.J. Huffman)

164. DEUTSCH, Helga M. *A comparison of women's throwing patterns.* Ph.D. in Physical Education, 1969. 150 p. (A.W. Hubbard)

165. DITTON, Robert B. *Recreation and water resources: A critical analysis of selected literature.* Ph.D. in Recreation, 1969. 267 p. (A.V. Sapora)

166. DUNN, Beverly A. *Recreation and physical education majors' attitude toward physical activity as related to sex and educational level.* M.S. in Recreation, 1969. 51 p. (D.W. Bishop)

167. DUTHIE, James H. *A comparison of beliefs and attitudes associated with physical activity in college freshmen.* Ph.D. in Physical Education, 1969. 119 p. (A.W. Hubbard)

168. FEINSTEIN, Susan R. *The effects of alcohol on personality.* M.S. in Health Education, 1969. 57 p. (W.J. Huffman)

169. FOSTER, Larry Eugene. *Energy cost of allout endurance exercises.* M.S. in Physical Education, 1969. 98 p. (T.K. Cureton)

170. Halberg, Kathleen J. *The effects of selected success criteria of recreational activities upon the observable behavior of conduct problem boys.* M.S. in Recreation, 1969. 117 p. (D.W. Bishop)

171. HOEFFNER, Balbina T. *The effects of alcohol upon vision.* M.S. in Health Education, 1969. 51 p. (W.J. Huffman)

172. HOLMES, Harold Z., Jr. *Effects of training on chronic health complaints of middle-aged men.* Ph.D. in Physical Education, 117 p. (T.K. Cureton)

173. INGOLD, John D. *An experimental evaluation of a required foundations of physical activity course for college freshmen.* Ph.D. in Physical Education, 1969. 152 p. (T.K. Cureton)

174. IRWIN, Robert P. *The effect of the teacher and three different classroom approaches on the seventh grade students' knowledge, attitudes and beliefs about smoking.* Ph.D. in Health Education, 1969. 201 p. (W.H. Creswell, Jr.)

175. JEANRENAUD, Claudine Y. *Play behavior of young children in a novel situation.* M.S. in Recreation, 1969. 68 p. (A.V. Sapora)

176. JETTE, Maurice J. *A study of long-term physical activity in sedentary middle-aged men.* Ph.D. in Physical Education, 1969. 156 p. (T.K. Cureton)

177. KAPILIAN, Ralph H. *The effects of rhythmical progressive exercises, isometric exercises, and tennis on the cardiovascular system of young men.* Ph.D. in Physical Education, 1969. 151 p. (T.K. Cureton)

178. KOVAR, Susan Vandewalle. *The relative effects of physical, mental, and combined mental-physical practice in the acquisition of a motor skill.* M.S. in Physical Education, 1969. 51 p. (A.W. Hubbard)

179. LOWERY, George A., Jr. *A multivariate analysis of the relationship between selected leisure behavior variables and personal values.* Ph.D. in Recreation, 1969. 166 p. (A.V. Sapora and D.W. Bishop)

180. MARCIL, Claire M. *The long-term effects of an exercise program on selected electrocardiographic measures in middle-aged men.* M.S. in Physical Education, 1969. 69 p. (B.D. Franks)

181. McFARLAND, Elsie M. *The development of public recreation in Canada.* Ph.D. in Recreation, 1969. 203 p. (A.V. Sapora and M.V. Frye)

182. MOORE, Claudia E. *The effects of alcohol on accelerator-brake response times.* M.S. in Health Education, 1969. 64 p. (W.J. Huffman)

183. OLAFSON, Gordon A. *Leader behavior of junior college and university physical education administrators.* Ph.D. in Physical Education, 1969. 178 p. (E.F. Zeigler)

184. PETERS, Martha L. *A comparison of the music sensitivity of mongoloid and normal children.* Ph.D. in Recreation, 1969. 77 p. (A.V. Sapora and D.W. Bishop)

185. POWELL, Richard R. *Comparison between fluid intelligence and selected physiological variables of adult exercisers and nonexercisers.* M.S. in Physical Education, 1969. 69 p. (R.H. Pohndorf)

186. PRUESKE, Eleanor C. *Relationship between hostility and health problems in college students.* Ph.D. in Health Education, 1969. 106 p. (W.J. Huffman)

187. RABE, Alan N. *The construction and testing of an evaluative instrument for measuring the high school driver education students' knowledge of traffic laws and regulations.* M.S. in Health Education, 1969. 60 p. (W.J. Huffman)

188. ROBERTS, Glyn C. *Effect of presence of others, cooperation and competition on risk-taking and performance.* Ph.D. in Physical Education, 1969. 111 p. (G.F. Lueschen)

189. RUPNOW, Allan Arnold. *The effects of selected educational materials on students' attitudes about smoking.* M.S. in Health Education, 1969. 57 p. (W.H. Creswell, Jr.)

190. SCHARR, Patricia, M. *Effects of training on body composition and serum cholesterol in women.* M.S. in Physical Education, 1969. 71 p. (B.D. Franks)

191. SCHLOSSER, John Emil. *The status of boys' soccer programs in Massachusetts high schools.* M.S. in Physical Education, 1969. 78 p. (E.F. Zeigler and M. Trekell)

192. SEEHAFER, Roger W. *The effects of a moderate blood alcohol concentration on driving.* Ph.D. in Health Education, 1969. 77 p. (W.J. Huffman)

193. SHERROW, Jeanne E. *The effect of a creative problem solving workshop on selected municipal recreation personnel.* Ph.D. in Recreation, 1969. 133 p. (A.V. Sapora)

194. SWANSON, Jon Colby. *Development of an instrument to measure attitudes and beliefs about smoking.* M.S. in Health Education, 1969. 82 p. (D.B. Stone)

195. WHITMORE, Caryn K. *Adaptive physical education for high school girls in Illinois.* M.S. in Physical Education, 1969. 65 p. (R.H. Pohndorf and R.E. Shelton)

196. WUELLNER, Lance H. *A method to investigate the movement patterns of children.* M.S. in Recreation, 1969. 91 p. (A.V. Sapora)

Illinois State University, Normal, Illinois (V.R. Crafts and A. Gillett)

197. BENNETT, Joan Lockhart. *A cinematographic project designed as a teaching aid for square dance.* M.S. in Physical Education, 1969. 82 p. (M. Gray)

A film, *Square Dance Patterns,* was developed to serve as a supplement for instruction and a resource for teachers of beginning groups in square dancing. Eleven undergraduate students were the demonstrators in the film; 3 additional students were involved in the sound portion of the film. The film is a 16 mm color-sound motion picture, 16 min. in length. Basic square dance figures are presented in sequences based on typical patterns of movement – circles, figure eights, stars, lines, grids. Performance in couples and groups is explained through narration and demonstration. A teaching guide accompanies the film.

198. BUCHANAN, Duane E. *Comparison of apparent propulsive force in the scissors kick and inverted scissors kick.* M.S. in Physical Education, 1969. 36 p. (M.L. Jones)

Ten intermediate level women swimmers and 10 more advanced women swimmers were *S*s in determining any difference in the propulsive force development in the scissors kick and the propulsive force developed in the inverted scissors kick. An instrument was devised to measure the distance travelled and the time that elapsed during a 5 leg-kick cycle while using the scissors kick and the inverted scissors kick. The distance-time measurements were converted to velocity scores and substituted in a force formula as a basis for comparison. No significant difference ($P > .05$) was found between the force developed in the 2 scissors kicks. The advanced group displayed more force than the intermediate group on both kicks.

199. HANSEN, Raymond Wayne. *The effects of weight training and trampoline training on vertical jumping ability.* M.S. in Physical Education, 1969. 39 p. (W.O. Truex)

SHS sophomore boys (N=39) volunteered as *S*s and were placed into 4 groups by the matched pairs method, based on the pretest in the vertical jump. Performance in the vertical jump did not improve as a result of the training methods employed, although leg strength did improve. There was no significant difference between the groups on the leg strength measure and the leg strength and body mass did not correlate with vertical jumping ability.

200. HOVDE, Carl Alexander. *A comparison of high school athletes and nonathletes on selected cardiovascular variables before and after exercise.* M.S. in Physical Education, 1969. 201 p. (R.N. Singer)

The purpose of this study was twofold: first, to determine the relationship of electrocardiographic recordings with some cardiovascular, respiratory, and anthropometric variables; second, to compare athletes and nonathletes on these same variables before and after exercise. The two groups consisted of 20 SHS distance and middle distance track athletes, and 20 SHS nonathletes. Analysis of covariance was utilized to compare

the athletic and nonathletic group means after exercise. The resting measure for each variable was used as the control or covariate. Intercorrelations were computed among 33 variables and significant correlations were determined.

201. HUTCHISON, Jill. *The effects of situational stress on women basketball players.* M.S. in Physical Education, 1969. 92 p. (R.N. Singer)

Effects of situational stress, as measured by telemetered heart rate response, were compared on 2 highly skilled basketball players who were rovers on the ISU women's intercollegiate basketball team. Stress situations were 5 games: practice, intramural, intercollegiate sportsday, state AAU tournament, and state intercollegiate tournament. For each game, 6 telemetered heart rates were recorded: prior to warm-up; prior to game; during periods of participation in game; during periods of nonparticipation in game; peak rate during game; immediately following game. Resting heart rates were determined weekly; "work" heart rates were taken using a bicycle ergometer and a maximum work load. Peak game rates were considered reactions to situational stress. Peak bicycle rates were considered responses to physical stress. Comments on game action were taped. Analyses of data revealed that situational stress seemed to produce greater physiological reactions than occurred in physical stress situations, type of games caused no significant difference in heart rate, and response to stress is individualistic as to nature, degree, and situation. Generally, performance seemed better if there was a steady high heart rate than if there was a constantly fluctuating heart rate.

202. KRACIK, Claude John. *The effect of selected preliminary activities on bat speed.* M.S. in Physical Education, 1969. 51 p. (B.H. Bass)

The purpose of this study was to ascertain the effects on bat speed of swinging a regular bat, swinging a weighted bat, stretching exercises and calisthenics, and no preliminary activity. The 27 *S*s, SHS varsity baseball players, were arbitrarily placed into 3 groups and were informed of the time of testing. A pilot study was conducted, utilizing a test-retest method, to determine the bat speed test reliability. A single factor ANOVA with repeated measures design used to determine any significant differences in bat speed due to the selected preliminary activities yielded a nonsignificant *F*.

203. MURPHY, Patricia L. *Understanding of legal liability by principals and women physical educators in selected Illinois high schools.* M.S. in Physical Education, 1969. 76 p. (V.R. Crafts)

Principals and women physical educators (N=929) in selected schools within the Illinois High School Association were given an informational test survey to determine their knowledge about legal liability in PE. One-way ANOVA and *t* tests revealed no significant differences in any of the area scores for principals and physical educators. Variables which were involved in grouping principals and women physical educators for the statistical treatment were: size of school, formal education, years of educational service, type of educational work, experience in teaching swimming, experience in coaching, involvement in a negligence case, and course of legal aspects of education before or after 1959. In

terms of total scores, both physical educators and principals exhibited average understanding of legal liability in the PE setting. Both showed good understanding for the specific areas, state statutes and first aid; both showed average understanding of the areas equipment and facilities, supervision, field trips and transportation.

204. POLACEK, Jerry J. *A cinematographical analysis of loop circles on side horse.* M.S. in Physical Education, 1970. 91 p. (W.O. Truex)

This research was concerned with the analysis and comparison of superior quality and inferior quality loop circles on the side horse. The 16 mm motion picture camera was placed in each of the 3 reference planes and provided the photographic records from which the data were collected. Eight *Ss* were selected by a panel of 5 gymnastics experts. Four *Ss* performed loop circles in a superior manner and 4 subjects performed loop circles in an inferior manner. Angular, time, and distance measurements were taken directly from the projected film records. Six questions dealing with the important factors concerning the performance of loop circles were resolved.

205. WRISBERG, Craig Alan. *The use of heart rates to determine the strenuousness of selected physical education activities.* M.A. in Physical Education, 1969. 57 p. (R.F. McDavid)

Male *Ss* (N=120) were measured to test the following hypotheses: regular college PE students do not achieve a mean working heart rate of 140 beats/minute, and swimming classes are significantly more strenuous than either badminton, bowling, golf, or volleyball classes. Heart rates were sampled at standard intervals throughout the study in each activity. Students in the PE activity program did not achieve a mean heart rate of 140 beats/minute in any of the sports measured; swimming, badminton and volleyball were more vigorous than bowling and golf; levels of strenuousness varied within an activity; and levels of vigor varied between activities.

Indiana University, Bloomington, Indiana (John M. Cooper)

206. ADAMS, Kela Osbourn. *The effects of adapted physical education upon the social adjustment and motor proficiency of educable mentally retarded girls.* Doctor of Physical Education, 1969. 235 p. (E.A. Davies)

Random selection from 2 JHS's was used in deriving 3 groups of 24 *Ss* each: experimental (EMR, IQ 50-79), control (EMR, IQ 50-79), and control (intellectually normal, IQ 90-110). Social adjustment and motor proficiency were measured by the Cowell Personal Distance Scale, the Cowell Social Adjustment Index, and KDX-Oseretsky Tests of Motor Development before and after the one semester of instruction with 50 min. periods. Peer acceptance of EMR girls placed in an adapted program appeared to be the same as that noted among normal girls. EMR girls placed in regular PE classes tended to be rejected by their classmates. The adapted PE program appeared to be more effective than the regular

program in-improving social adjustment of EMR girls. The adapted program was no more effective than the regular program in improving motor performance among EMR girls.

207. BENDER, Stephen Joseph. *The human reproduction knowledge of prospective elementary teachers.* Doctor of Health and Safety, 1969. 144 p. (D.J. Ludwig)

Senior elementary education majors in NCATE-approved higher institutions in Tennessee were sampled by McHugh's Sex Knowledge Inventory, Form Y. The students were found to be poorly prepared in terms of sex knowledge. Marital status and number of brothers and sisters appeared to affect their sex knowledge.

208. BILLINGS, Edward S. *Analysis of the attitudes of athletes and nonathletes toward integrated athletic competition.* Doctor of Physical Education, 1969. 120 p. (J.B. Daugherty)

An athletic attitude inventory was administered to 3 schools involving 2 groups from each school. One school was selected at random from 6 Negro schools; one white school was chosen at random from 13 white schools; and the third school was chosen because of its integrated status. Students on the track team and one group in a PE class were tested from each school before the beginning of track season and were re-administered the same inventory after the finish of the track season. It was determined that there were no significant changes in attitudes by the pre- and post-measures of the teams; thus it appeared that attitudes of prejudice and ethnocentrism did not improve in direct proportion to the athletic success of the teams. However, analysis indicated that success and prejudice were not closely associated.

209. BROWN, Dulcie Patricia. *The effect of augmenting instruction with an improvised teaching aid for college women in learning selected badminton skills.* Doctor of Physical Education, 1969. 135 p. (E.A. Davies)

The study was designed to determine the effect of augmenting badminton instruction with the use of a suspended shuttle to practice 2 strokes – the overhead clear and the smash – upon 101 freshman college women beginners in badminton randomly assigned to 4 treatments. All 4 groups showed a statistically significant amount of learning in the overhead clear and the smash from the initial to the final period of instruction, and all but the control group showed a statistically significant amount of learning from the initial to the final tests on the distance list.

210. BUCKNER, William Pat, Jr. *The prevalance of sex misconceptions among freshmen students enrolled in predominantly Negro state supported colleges of Louisiana.* Doctor of Health and Safety, 1969. 296 p. (D.J. Ludwig)

The method of investigation was the normative survey. Problem areas included in the instrument of investigation were developed by investigation of the literature of studies concerning health interests, knowledge and attitudes of college students, interviewing college health teachers, doctors, nurses, and college students. Seven problem areas were selected relating to the following topics: biological basis for sex, marriage and

family living, genetics, preparation for parenthood, genital-urinary infections, psychosexual development, and a typical sex behavior. Negro freshmen (1,342) attending the 4 predominantly Negro state supported colleges of Louisiana completed the check list administered by the investigator. It was found that sex misconceptions prevailed in the total group and in each subgroup concerning each of the 7 problem areas. Male students were found to believe a higher percentage of misconceptions than females in the total test; Protestants and Catholics held approximately equal percentages of unfounded beliefs; married students had a lower percentage of misconceptions; and the size of home residence had no statistically significant influence.

211. BUSH, Herman S. *A health analogies pretest for a basic college health course.* Doctor of Health and Safety, 1969. 189 p. (J.K. Rash)

The purpose of this study was to develop a valid, reliable pretest which could be used to determine health knowledge and comprehension of students enrolling in a basic college health course. Curricular validity was established through gleaning 10 college-level health tests, a word count of 9 current college health textbooks, and the pooled judgment of 26 health authorities. Three preliminary test forms of 100 items each were administered to a minimum of 680 *Ss* in 4 Kentucky colleges. Final administration provided the basis for establishing norms in the form of T-scores and percentile ranks for students entering basic health courses. There was a significant difference between the means of men and women taking the test, with the women scoring higher ($P < .01$). It was concluded that the analogies test was a valid, reliable instrument for measuring the health knowledge and comprehension of these students.

212. CHANEY, Rex. *The effects of a selected recreational activity on the I.Q. scores, social adjustment, and physical coordination of the educable mentally retarded child.* Doctor of Recreation, 1969. 182 p. (T.R. Deppe)

Twenty-one members of the special education classes at Morehead State University Breckinridge School and the elementary schools in Rowan County were selected as *Ss*. They were randomly assigned to experimental and control groups and given pretests, intermediate tests, and post-tests pertaining to IQ, social adjustment, and physical coordination. The experimental group received the recreational activity treatment. In the area of IQ, a significant difference was found between experimental and control groups during the post-test period. In the area of physical coordination, a significant difference was found between the experimental and control groups during the intermediate test and post-test periods. In the area of social adjustment there was no significant difference found during the post-test period. A planned recreational program consisting of dance and rhythmical activities increased IQ and physical coordination of most educable mentally retarded children.

213. COLVIN, Carolyn. *The effect of rhythmic training and relaxation training on sensory-motor rhythmic ability.* Ph.D. in Physical Education, 1969. 167 p. (E.A. Davies)

A sensory-motor rhythm test was administered to 563 college sophomore women at Western Illinois University. Following the initial testing,

119 of 188 invited women volunteered as *S*s and were randomly divided into 4 groups and randomly assigned treatments – rhythm, relaxation, rhythm and relaxation, and control. Sixteen 50-min. lessons were taught over an 8-week period. The 107 *S*s who completed training took the final test of sensory-motor rhythmic ability. Relaxation training was effective in reducing excess muscular tension in a supine position. The combination of rhythmic and relaxation training was significantly more effective than other types of training in improving sensory-motor rhythmic ability on test scores.

214. EVANS, Dale William. *An evaluation of the doctoral program in health and safety at Indiana University.* Doctor of Health and Safety, 1969. 124 p. (D.J. Ludwig)

The method of investigation used was a questionnaire mailed to the 64 living graduates of the program. A series of follow-up letters resulted in 59 graduates participating in the study. It was determined that the program as it is constituted: attracts males with PE background from institutions within the state or surrounding states; the reputations of the faculty and school were the primary reasons for choosing Indiana University; of the major requirements the graduates were most satisfied with the oral defense of the dissertation; they were least satisfied with the required statistic courses; the strengths of the program include the faculty and faculty-student relations; the graduates are not in favor of the union of health and safety in higher education, but do seem to favor this union at Indiana University; and the graduates would generally select the same area of study and institution if they were beginning studies again.

215. GRAY, Marvin Ronald. *The history and philosophy of intercollegiate athletics for men at Ball State University.* Doctor of Physical Education, 1969. 173 p. (J.B. Daugherty)

Emphasis was given to philosophies and purposes, as well as to the forces which determined the intent of the program. The investigator adhered to the location of the sources and the collection of the data, the organization, analysis, and criticism of the data, and the presentation of the findings. The intercollegiate athletic program at Ball State was considered one phase of the total program of PE. Traditionally, Ball State has attempted to meet the athletic needs of as many members of the male student body as possible.

216. GRIFFITH, Charles A. *A study of municipal recreation personnel in Ontario with implications for continuing education.* Doctor of Recreation, 1969. 191 p. (T.R. Deppe)

A random sample of 130 municipally employed personnel was drawn. An instrument designed to collect the data was personally administered in Ontario at a series of 18 regional meetings. A total of 108 instruments were obtained. Data were analyzed using a percentage analysis technique, measures of central tendency, and the chi-square test for goodness of fit. It was found that personnel recognized the value of, and were interested in, continuing education. The need for upgrading the educational level of municipally employed personnel was evident. A need existed for continuing education programs that would emphasize personnel

management, planning and research, public interpretations, finance, relationships between schools and municipal recreation, programing, and areas and facilities.

217. HINES, Douglas J. *The effects of direct practice, calisthenics, sprint training, and weight training on performance in selected basketball skill tests.* Doctor of Physical Education, 1969. 176 p. (J.B. Daugherty)

The problem was to compare the effects of calisthenics, direct practice, spring training, and weight training on the improvement of performance in the baskets/min., dodging dribble, 40-ft. dash, jump shot, vertical jump, and wall bounce tests. *Ss* (81 college males chosen at random) met for two 55-min. class periods each week for 12 weeks. The criterion measure was developed from the Lehsten basketball skill test. Performances on the 6 criterion test items were improved over the 12-week period. Basketball skills were satisfactorily taught by the 4 training approaches, but none of the 4 methods was significantly better than the others.

218. HOFFMAN, Hubert A. *The effect of instruction and practice on throwing ability of primary grade children.* Doctor of Physical Education, 1969. 112 p. (E.A. Davies)

First, second, and third grade boys and girls in 2 classes at each grade level were assigned randomly to grade level groups. The groups were assigned randomly to treatments (experimental and control). *Ss* had a daily 30-min. PE class for 6 weeks. Experimental groups received group and individual instruction on throwing and continuous practice in throwing. Control groups received no throwing instruction but played traditional throwing games. It was found that: experimental group first grade girls improved significantly over the control group on the accuracy and distance tests; experimental group second grade boys improved significantly over the control group on the distance tests; and experimental group gains were greater than control group gains, although non-significantly on all tests except for first grade boys on the distance test. It was found that practice and instruction on the one-hand overhand throw yielded greater gains in throwing for accuracy and distance than just playing throwing games.

219. JACKSON, Andrew Stonewall. *Factor analysis of tests of muscular strength, endurance, and gross motor patterns that involve projecting objects and projecting the body.* Doctor of Physical Education, 1969. 181 p. (J.B. Daugherty)

A theoretical model comprised of 9 factors was hypothesized. It was defined by the following categories: basic dimensions of muscular strength and endurance, and basic dimensions of gross motor patterns that involve projecting objects and projecting the body. To test the theoretical model, 25 tests were selected and were administered to 76 male major students. The data were analyzed by the following models of factor analysis: incomplete principal components analysis; alpha factor analysis; canonical factor analysis; and, incomplete image analysis. Factor one was general to both arms and legs, but was measured primarily by arm involvement. Factor 2 was isolated by tests of leg

strength. Factor 3 was defined by body projection tests that involved sprinting and jumping. Factor 4 was defined by agility tests that involved running. Factor 5 could not be explained by causal relationships among the experimental tests. The importance of body height confounded by factors of basketball achievement inherent in the tests that loaded on this factor offered the most logical interpretation.

220. JONES, Tommy Ray. *Relationship between status of professional preparations programs and attainment of selected outcomes by students.* Doctor of Physical Education, 1969. 163 p. (K.W. Bookwalter)

Two tests were administered to the graduating senior men PE majors of 22 selected institutions to appraise their status with regard to professional knowledge and attitudes. Three groups, based on score card ratings of the institutions, were then evaluated using ANOVA, Kruskal-Wallis H., and 2 types of correlation coefficients. ANOVA for pooled students within the 3 groups on the knowledge test was significant but difficult to interpret because the middle and lower group were reversed in order. All other tests for the 3 groups failed to reveal statistical significance. Correlations between attitude scale results and score card areas revealed 6 negatively significant coefficients. It was found that the Bookwalter-Dollgener Score Card was invalid for measuring program objectives as determined by the use of the 2 tests in this study, except when all students were pooled within each group for the knowledge test.

221. LEAMING, Thomas W. *The effects of praise and reproof as a function of intelligence and extraversion-introversion in learning a kinesthetic task.* Doctor of Physical Education, 1969. 97 p. (A.T. Slater-Hammel)

College male *Ss* classified as superior intelligence-extroverts, superior intelligence-introverts, average intelligence-extroverts, and average intelligence-introverts attempted to learn a kinesthetic task while blindfolded under one of 3 verbal incentive conditions – praise, reproof, and indifference. The 3 x 2 x 2 factorial randomized group design of analysis was used. The kinesthetic task performed by *Ss* was to trace the test pattern from start to finish without touching it with a tracing ring. Extrovert *Ss* learned the kinesthetic task in significantly fewer trials and completed each trial in significantly less time than introvert *Ss*. Praised *Ss*, regardless of their intelligence-personality trait classification, took significantly longer to complete each trial than reproved or indifferent *Ss*.

222. LEFEAVERS, Perry Lee. *A history of sports at the Methodist Children's Home in Winston-Salem, North Carolina.* Doctor of Physical Education, 1969. 493 p. (K.W. Bookwalter)

The history of competitive sports at the Methodist Children's Home was traced from 1909 to 1968 through the investigation of diverse sources such as scorebooks, newspapers, minutes of the board of trustees, films, pictures, school annuals, scrapbooks, and interviews. High caliber leadership was evident throughout the years. The consolidation of public SHSs and changing concepts of institutional care of children had

negative influences on the Children's Home sports. The development of pride in the orphanage and in themselves and encouragement to graduate from SHS seemed to be the unique contributions of competitive sports in the Children's Home.

223. LISKEY, Nathan Eugene. *The menstrual cycle and accident involvement.* Doctor of Health and Safety, 1969. 85 p. (D.J. Ludwig)

Data were collected by supervising nurses of cooperating health services of SHSs, colleges, and universities. It was concluded that SHS females have more accidents during the menstrual and premenstrual phases; college and university women not using the birth control pill have more accidents during the menstrual and premenstrual phases; SHS females with menstrual flows of 6 and 7 days have fewer accidents during their premenstrual and menstrual phases than SHS females who have menstrual flows of 4 and 5 days; college and university women not using the birth control pill with menstrual flows of 6 and 7 days have fewer accidents during their premenstrual and menstrual phases than college and university women not using the pill who have menstrual flows of 4 and 5 days; there is no difference between the accident involvement of SHS females and that of college and university women not using the pill.

224. MASSIE, Lois O'Neil. *Selected practices for the conduct of women's intercollegiate athletics in Kentucky colleges.* Doctor of Physical Education, 1969. 260 p. (E.A. Davies)

The value of selected practices in the conduct of women's intercollegiate athletics in meeting program objectives, determination of the frequency of occurrence of selected practices in the conduct of programs in 12 Kentucky colleges, assessment of the potential of the programs in meeting objectives, and the formulation of statements to guide Kentucky physical educators, was determined. Twenty-eight women physical educators served as a jury. Three-fourths of the reported practices were evaluated as desirable or acceptable by the jury mean. Some conditions existed in some of the colleges which endangered the health and safety of women student athletes.

225. NG, David. *Variables related to academic success of graduate recreation majors in the School of Health, Physical Education, and Recreation at Indiana University.* Doctor of Recreation, 1969. 163 p. (T.R. Deppe)

The relationship of selected personal characteristics, undergraduate scholastic achievement, and certain higher education institution characteristics to graduate academic success in the master's degree program in recreation at Indiana University for students receiving the degree in the years 1964 through 1968 was examined. Graduate recreation majors (N=136) were selected as Ss. Dependent variables analyzed were: GPA in graduate professional recreation courses; GPA in graduate nonrecreation courses; and overall graduate GPA. Seven variables pertaining to personal characteristics, variables pertaining to undergraduate education, and the undergraduate scholastic achievement variables served as independent variables. The independent variables significantly related to graduate academic success were sex, seasonal professional experience, and undergraduate GPA. The 4-year undergraduate grade point average

was a useful predictor of academic success for the master's program in recreation and was the best predictor among the variables studied.

226. OBERLE, George H. *An analysis of the historical development of the Indiana Association for Health, Physical Education, and Recreation.* Doctor of Physical Education, 1969. 230 p. (G.F. Cousins)
Validated data were placed in narrative form under the following topical headings: origination and development, growth, influence, and highlights of leadership. The original objectives proposed for establishing an association for PE were expanded to include the fields of health and safety, athletics, and recreation. Cooperative ventures throughout the years afforded professional status to both the Association and its members. Growth was evident through membership, finances, changes in structure, and project work. Conventions, workshops, meetings, special projects, conferences, and clinics afforded the membership opportunities to express special interests. The members of the Association provided state, regional, and national associations with outstanding workers and leaders.

227. PAIGE, Roderick Raynor. *The effect of pre-foreperiod preparation and foreperiod duration upon the response time of football linemen.* Doctor of Physical Education, 1969. 123 p. (G.F Cousins)
Twelve volunteer male college varsity football students were tested under 6 conditions. Treatment conditions given on each of 6 days resulted from all possible combinations of 2 variables – one at 2 levels and the other at 3 levels. Two independently randomized 6 x 6 Latin squares were generated and the rows of 2 squares were randomly intermixed. *Ss* were found to differ significantly in reaction time abilities. The 6 treatment conditions were found to be significantly different. There were wide differences among the levels of performance for the *Ss* in reaction, movement, and response time. Reaction times were significantly affected by the different foreperiod directions and by the interaction between foreperiod direction and pre-foreperiod preparation.

228. PRIOR, Thomas Benjamin. *Tethered swimming under acute exposure to four simulated altitudes.* Ph.D. in Human Performance, 1969. 143 p. (J.E. Councilman)
The differences in physiological effects produced by 4 simulated altitudes on 16 highly trained volunteer *Ss* swimming maximally in a tethered situation and tested in random order with a Balke style swimming test were determined. Equipment used consisted of hand-built swimming ergometer, underwater motivational light system,.001 min. timer, breathing system regulated by a demand valve in the mouthpiece, gas meter, mixing chamber, respiration counter, and heart rate telemeter. Gas samples were analyzed with a Haldane Gas Analyzer and concentrations of blood lactate by an enzyme method. Swim time to exhaustion, maximal oxygen consumption, maximal heart rate, maximal ventilation, maximal respiration rate, tidal volume, maximal carbon dioxide expired, blood lactate concentration, and the respiratory exchange ratio were reliably measured in high caliber collegiate swimmers swimming to exhaustion. Retarding effects of simulated high altitude upon tethered swimming performance times began at as low an altitude as 4,920 feet.

229. PUTHOFF, Martilu. *The doctoral degrees in health, physical education, and recreation: A historical case study.* Doctor of Physical Education, 1969. 412 p. (E.A. Davies)

The growth and development of graduate education leading to doctors' degrees in health, physical education, and recreation at Indiana University from 1930 to 1966 were studied. The type of research utilized was a historical case study with a genetic approach in which cause-and-effect relationships were sought and points of agreement or difference were noted according to time and place. The major processes involved in applying historical method to this research were: collection and classification of data, criticism of data, and presentation and interpretation of facts.

230. RAILEY, Jimmy H. *The effects of imitative resistance exercise and direct practice on handball serving skill.* Doctor of Physical Education, 1969. 92 p. (K.W. Bookwalter)

Training techniques consisted of resistance exercise that imitated a handball serving motion, direct practice in serving a handball, and a combination of imitative resistance exercise and direct practice. Pretreatment and post-treatment measures of handball speed and accuracy of the serve were obtained from 64 male college students. ANOVA indicated that all of the experimental groups exhibited significant gains ($P < .05$) in serving speed during the treatment period. However, no significant difference was found between the groups for the improvement of serving speed. There were no significant increases or decreases in serving accuracy as a result of the treatment period. It was concluded that imitative resistance exercise, when compared with other intensive training methods, was not significantly superior in the improvement of a handball serving skill.

231. REECE, Alfred Marion, Jr. *A critical evaluation of undergraduate professional preparation in physical education in selected coeducational institutions in Kentucky, Tennessee, and West Virginia.* Doctor of Physical Education, 1969. 353 p. (K.W. Bookwalter)

Coeducational institutions (N=25) offering an undergraduate major PE, selected by stratified-random technique from a population of 58, were interviewed and scored on the Bookwalter-Dollgener Score Card for Evaluating Undergraduate Professional Programs in Physical Education. The 5 highest subareas in order of decreasing attainment of scores were: personality of instructors; recruitment; selection; guidance and counseling; general practices; placement; professional affiliation and accreditation. The 5 subareas lowest in attainment in order of increasing scores were: admissions; number (staff); follow-up and in-service education; instructional-recreational facilities; and foundation services. Institutions which came nearest to meeting the standards of the score card had enrollments in excess of 10,000 students, supported professional schools of PE and were accredited by NCATE. A high degree of internal consistency of the score card items was indicated in this appraisal (Spearman-Brown *r* was .965).

232. RUSHALL, Brent Sidney. *The demonstration and evaluation of a research model for the investigation of the relationship between*

personality and physical performance categories. Ph.D. in Physical Education, 1969. 296 p. (J.E. Counsilman)
The study evaluated present procedures and research techniques relating the study of personality to physical performance. Statistical analyses were found to be generally inadequate. A research model for investigating the relationship between personality and physical performance categories was generated. Statistical analyses were proposed to overcome a variety of deficiencies. The scientific vigor demanded by the presented research model should be adhered to in order to produce more meaningful and valid information and facts.

233. SANDIDGE, Phillis N. *A health problems inventory for high school students.* Doctor of Health and Safety, 1969. 176 p. (J.K. Rash)
The Health Problems Inventory consisting of 190 problem situations was developed from current health textbooks, related studies, and personal field experiences. A randomly selected group of 740 students who were juniors in public HSs and 49 faculty members who were guidance counselors, health and safety instructors, PE instructors, and home economics instructors responded to the situations in the inventory.

234. SEBOLT, Don Roy. *The relationship of ball velocity and tennis playing ability of college men.* Doctor of Physical Education, 1969. 120 p. (J.B. Daugherty)
This study was designed to investigate the relationship of maximum velocity of the forehand drive, backhand drive, and serve, and controlled velocity of the forehand and backhand drives to the criterion measure of tennis playing ability as measured by the results of a round robin tournament. A group of 40 *S*s was randomly chosen and given instruction in beginning tennis. Method of instruction used was the traditional method. Multiple-flash stroboscopic photography was used to measure ball velocity. Maximum velocity of the serve was the only velocity test item that was significantly related to playing ability for both groups. It was also found that a significant relationship existed between maximum and controlled velocity.

235. SIEDENTOP, Daryl. *A theory for programs of physical education in the schools.* Doctor of Physical Education, 1968. 245 p. (J.B. Daugherty)
A theory of PE was constructed to serve as a theoretical base from which programs of PE in the schools might be conceptualized and conducted in attempts to establish a meaning-centered education. The method used was a generally deductive framework consisting of 2 primary levels of inquiry: the speculative-analytical level, and normative level. Four premises were considered necessary: a view of man that focuses on the characteristics of his existential state of being; a social philosophy which insists that education serve the American political democracy by first and above all serving the individual student; a conceptualization of the aims of education that is intrinsic to the activities of education; and, a recognition of principles evolving out of the existential nature of man and the nature of a political democracy, which serves as a guide for teacher-student relations. A conceptual definition of physical education was derived after examining several conceptual definitions that have found considerable acceptance in the profession.

236. SIMPSON, James L. *Effects of auditory-visual, motor-sensory, and direction variables upon total body reaction time and total body movement time.* Doctor of Physical Education, 1969. 114 p. (K.W. Bookwalter)

This study involved the response aspects of reaction time and movement time in a total body movement. Measures of reaction time and movement time were obtained from 32 male college students. The relationships between reaction time and movement time in total body movements were significantly negative. *S*s moved faster in the forward direction, but they reacted faster when preparing to move in a backward direction.

237. SMITH, Stanley Marion. *Pre-student teaching experiences in physical education by men and women majors in selected Indiana colleges and universities.* Doctor of Physical Education, 1969. 172 p. (K.W. Bookwalter)

Fifty-three PE department chairmen and faculty members in 15 institutions were interviewed. Data concerning the 25 provisions and practices for programs in the 30 men's and women's PE departments were obtained. Judgments by the faculty members regarding the value of participation and observation experiences were also solicited. No significant differences were found in the mean attainment scores for the provisions and practices in the participation and observation programs between the men's and women's departments or between the small and the medium-to-large institutions. The programs should be better organized since none of the departments had a director or coordinator, a file of each student's participation and observation records, a pamphlet describing the program of laboratory experiences, funds for audio-visual equipment and supplies.

238. SOROCHAN, Walter D. *Attitudes of secondary school health educators of Kentucky toward smoking and health.* Doctor of Health and Safety, 1969. 147 p. (J. K. Rash)

A booklet consisting of an 18-item demographical questionnaire and a validated semantic differential scale was used. Responses (N=304) to the demographical data were subjected to the chi-square technique. Responses to the attitudinal scale were subjected to a single ANOVA. Three hypotheses were tested for significant differences between the attitudes of health educators, categorized as smokers, ex-smokers, and nonsmokers: toward smoking in general; toward smoking behavior; and toward smoking and education. Significant differences were found among health educators in their attitudes toward smoking in general, and toward smoking behavior. Nonsmokers had a less favorable attitude toward smoking behavior than did smokers and ex-smokers. No significant differences were found between the attitudes of smokers, ex-smokers, and nonsmokers toward smoking and education.

239. SWANDER, Robert Dean. *The effects of varied distances and basket sizes on basketball shooting ability.* Doctor of Physical Education, 1969. 123 p. (K. W. Bookwalter)

This study was conducted to determine if basketball shooting practice from selected distances of 15, 19, and 23 ft., at a smaller than regular basket (14 or 16 in. in diameter) would enhance improvement more than basketball shooting practice at a regulation size basket. Skilled basketball players (N=45) were divided into 3 equated groups on the basis of

initial basketball shooting skill. Practice for all groups was identical with the exception of the basket size. Practice data indicated that none of the groups improved significantly from the distance of 15 ft. from the basket. The 14-in. basket group failed to improve significantly from any of the 3 distances. The 16-in. and 18-in. basket groups improved significantly from the distances of 19 and 23 ft. Pre- and post-test data indicated significant improvement during the 20-day practice period for all groups. No significant differences were detected among the groups in their basketball shooting ability after 20 days of practice. It was concluded that practicing at baskets which were 2 or 4 inches smaller in diameter than the regulation basket did not result in significantly better shooting ability than did practicing at official baskets.

240. VINTON, Dennis Alan. *The relationship between the power structure and parks and recreation in a large urban community.* Doctor of Recreation, 1969. 179 p. (T. R. Deppe)

The relationship between the power structure and parks and recreation in a large urban community (Indianapolis, Indiana) was analyzed in order to gain a better understanding of the forces that determine, control, and perpetuate the provision of park and recreation services in the community. Two techniques — the reputational technique and the positional technique — were utilized to identify 34 influential individuals comprising the power structure in the community. Data from 24 personal interviews were organized and analyzed to determine the nature and characteristics of the power structure, the relationship between the power structure and general issues of community concern, and the relationship between the power structure and the substantive area of parks and recreation. Provision of public park and recreation services was ranked fifth among 10 issues of general community concern in terms of relative significance. Those interviewed were as a rule not knowledgeable about the provision of public park and recreation programs, the philosophy, goals, and functions of such programs.

241. WAECHTER, John Edward. *Comparison of the performance of selected groups of athletes and nonathletes on a transit reaction.* Doctor of Physical Education, 1969. 95 p. (A. T. Slater-Hammel)

Four groups (N=12) of SHS boys (baseball players, tennis players, trackmen, and nonathletes) were *S*s and performed reactions under the following experimental conditions: transit reactions without knowledge of results, and transit reactions with immediate knowledge of results and catch trials. In addition to the transit reaction responses, *S*s performed simple reaction time responses. *S*'s primary transit reaction task was to release a signal key at the instant a revolving pointer and fixed marker coincided. The 4 groups did not differ significantly in their performance of transit reactions; performance of transit reactions with immediate knowledge of results and no catch trials was highly accurate; *S*s performed transit reactions best when they received immediate knowledge of their results; *S*s were early in making their transit response under the condition of no knowledge of results; and with the introduction of catch trials, *S*s were consistently late in making their transit response. The estimated refractory period was 144 milliseconds.

University of Iowa, Iowa City, Iowa (L.E. Smith and M. Gladys Scott)

242. ANDRE, Mary J. *The history of the women's undergraduate physical education program at the University of Iowa.* M.A. in Physical Education, 1969. 627 p. (M. G. Scott)

Women started teaching at the university in 1900. Alice Bates became the first director in 1910; other department chairmen were: Marion Schwob, Elizabeth Halsey, and M. Gladys Scott. Starting with one instructor in 1900, the department now has 19 full-time staff members. Eighteen courses were offered in the beginning; today there are more than 70. A 2-year curriculum established in 1917 was changed to a 4-year program in 1920. Since then, recreation leadership, dance, pre-physical therapy, and physical welfare majors have been added to the curriculum.

243. BURKHARDT, John E. *Statistical comprehension for graduate students in physical education: Test and norms.* Ph.D. in Physical Education, 1969. 158 p. (D. R. Casady and R. A. Forsyth)

The purpose was to construct for use by graduate students in PE parallel forms of a test of statistical comprehension that would measure their level of understanding of the statistical techniques and methods that frequently appear in the *Research Quarterly*, and proficiency in interpreting the findings resulting from the use of the statistical techniques and methods. The data, used to evaluate the test forms and to establish norms, were obtained from the administration of both forms of the Test of Statistical Comprehension to 1,013 graduate students in PE at 51 colleges and universities. The evidence of validity — content, concurrent, and construct — was sufficient to indicate that the Test of Statistical Comprehension is valid.

244. BILLINGTON, D. Rex. *Methods of determining pain tolerance and relationships to personality traits.* M.S. in Physical Education, 1969. 54 p. (L. E. Smith)

The aims of the study were to investigate: whether the method of inducing pain affected pain tolerance ability; the relationship between pain tolerance levels induced by 3 different methods of application and the Maudsley Personality Inventory (M.P.I.); and Eysenck's theory that extroverts are perceptual reducers and introverts perceptual augmenters. A mechanical apparatus forced a pair of tongs together which applied pressure to the *S*'s thigh. It could be manipulated to reduce pain by any of the following 3 methods: gradual, discrete step, or a random discrete step. Inducing gross pressure pain by the gradual or discrete step methods did not produce different pain tolerance levels. There was no conclusive evidence to support Eysenck's hypothesis concerning the relationships between pain tolerance and extroversion/neuroticism as measured by the M.P.I.

245. CANFIELD, Lynda Williams. *Playdays and sportsdays as techniques for recruiting physical education undergraduate students from the public schools.* M.A. in Physical Education, 1969. 53 p. (M. G. Scott)

Teachers from 23 SHSs were asked to administer a questionnaire to the 471 girls who attended a sportsday event and 171 at a playday event.

They were also asked to pick an equivalent group from the nonattending students who then responded to the same questionnaire. Instructors were also given a questionnaire, regarding the methods of group selection and observable results upon the students involved. The student questionnaire obtained information concerning career choice, stability of that choice, knowledge of that choice, acceptability of PE as a career, and the rating of careers of greatest dislike. The instructor questionnaire revealed that the groups were chosen in a similar manner, and that there were observable changes regarding interest in the profession of PE on the part of the attending students. The student questionnaire revealed that the group who had attended had a greater acceptability of PE as a part of education, and as a profession.

246. CARMODY, James F. *Attitude inventory for measuring attitudes of male faculty at the University of Iowa toward the program of required physical education: Development and application.* M.A. in Physical Education, 1969. 102 p. (D. R. Casady and L. E. Smith)

The mean score of the total faculty within each of 8 colleges fell within the "slightly favorable" scale interval, and a significant majority (62%) of the respondents had either "slightly favorable" or "favorable" attitudes toward the program of required PE for men. The mean score of the faculty within the College of Liberal Arts fell within the "slightly favorable" scale interval, and a significant majority (59%) of the respondents were either "slightly favorable" or "favorable" in their attitudes. The highest mean attitude score of any of the categories studied was obtained from heads of departments, with 61% of them having attitude scores that fell within the "favorable" scale interval.

247. CERRA, Gloria Jean. *The effects of grading and nongrading on the physical education performance of junior high school girls.* M.A. in Physical Education, 1969. 63 p. (J. Schahill)

Ss (N=38) in Group I (graded) and *Ss* in Group II (not graded) (N=47) were given 3 softball skill tests and a softball written examination to measure their PE performance. A comparison of the final grades for the *Ss* in the groups was also made. Results indicated a significant difference between means in favor of the graded group on only one of the 3 skill tests, a timed test. Grading had little or no motivational effect on the softball written or skill test performance. Final grades, based on subjective evaluations plus skill and written test grades, tended to be higher for *Ss* who were working for a grade than for *Ss* in the nongraded group.

248. CHANG, Cheng-ou. *An evaluation of the health and physical education programs in selected secondary and vocational schools in Taiwan.* M.A. in Physical Education, 1969. 126 p. (P. L. Reuschlein)

The purposes of the study were: to evaluate and compare the status of the HPE programs of private secondary, public secondary, and vocational schools in Taiwan; and to compare the status of the HPE programs of the public secondary schools in Taiwan with those reported in selected studies in the United States. A Modified Health and Physical Education Score Card No. II was used as the evaluative instrument. Of the 263 randomly selected schools stratified into 6 categories in terms of type and location of schools, 197 provided complete data. Results showed that there is a wide variation in the quality of the HPE programs in Taiwan schools. Private secondary schools had the widest range in score

card total scores. City schools scored better than rural schools, larger schools scored better than smaller schools, and schools located in larger towns scored better than schools located in smaller towns with regard to the quality of the HPE programs in Taiwan.

249. CRABBE, James M. *Development of an instrument to determine physical education students' perception of high school coaches' problems.* M.A. in Physical Education, 1968. 89 p. (D. R. Casady and L. A. Miller)

The purposes were to develop a valid instrument for determining the problems of most concern to coaches in the SHSs of Iowa; and to utilize the instrument to determine if PE students feel the same concern for the problems they are apt to encounter as SHS coaches. Football and basketball coaches (N=100) in the Class A and Class AA SHSs were sent copies of the Coach's Significant Problem Analysis and were asked to complete and return them. Graduate and undergraduate PE students at the University of Iowa and the University of Northern Iowa were not wholly aware of some of the problems of coaches. The students had several misconceptions about the practical significance of some of the problems of concern to coaches. The major problem categories wherein students differed the most from coaches in their concern for problems were personal relations and athletic program administration.

250. DHILLON, Prit P. *The effect of exercise on weight reduction in overweight college women.* M.A. in Physical Education, 1969. 42 p. (N. P. Burke)

Seventeen overweight women students between the ages of 18 and 22, enrolled in a college weight control class, participated in an 8-week exercise program. The class met 4 times a week and followed a vigorous program of isotonic exercises, including running, rope skipping, and calisthenics. The weight of *S*'s before and after training plus their height and skeletal diameters were taken and the Behnke technique was used to determine lean body weight and percent body fat. Great individual changes in total body weight and percent body fat were noted, but none of these changes for the group was statistically significant. It should be noted, however, that a limitation of the Behnke technique is that it does not detect changes in muscle mass and may therefore underestimate reductions in body fat that occur.

251. DINKHELLER, Ann L. Baker. *Factors affecting flexibility.* M.A. in Physical Education, 1969. (N. P. Burke)

Five anthropometric measures and 3 measures of flexibility were taken on college women *S*s. Two of the flexibility measurements were goniometric, and one was a measure of the forward sit. A device was constructed for the forward sit measurement. A significant relationship was found to exist between performance of the forward sit and distance from the longest finger to the head of the fibula. A significant relationship was also found between *S*'s excess of trunk and arm length beyond leg length and the performance of the forward sit. The linear measurement of the forward sit was not highly correlated with flexibility as measured by a gravity goniometer. Two of the anthropometric measures had a significant effect on flexibility as measured by the gravity goniometer.

252. FINANGER, Kenton E. *An electromyographic study of the function of selected muscles involved in the throwing of the discus.* Ph.D. in Physical Education, 1969. 179 p. (L. E. Alley and G. M. Asprey)
The functions of the right deltoid (anterior and middle heads), the right biceps brachii (short head), the right pectoralis major (clavicular and sternal heads), the right external oblique, the left internal oblique, the right serratus anterior, the right teres major, and the right latissimus dorsi muscles in the throwing of the discus were studied by electromyography. For each of the 4 varsity *S*s, the angular and linear velocities of the discus at the instant of the release were not the result of uniform acceleration throughout the th None of the muscles studied exhibited continuous contraction through the throwing movement. All the muscles included in the study, although not for all *S*s, showed at least slight activity at the instant *S*s release the discus and during the follow-through; hence, ballistic movement was not observed.

253. FOSS, Merle L. *Free 11-OHCS levels in working dogs as affected by exercise training.* Ph.D. in Physical Education, 1969. 130 p. (C. M. Tipton)
The study was conducted with dogs to determine the responses of the adrenal cortex to a standardized work test and to assess the effect of exercise training on these responses. The 7 dogs performed a standardized treadmill work test at various intensities of exercise. Mean values for circulating free plasma 11-OHCS tended to increase during light or moderate exercise. There was considerable variability in the response at these loads. Plasma 11-OHCS levels were significantly increased during the performance of heavy work. When heavy work was continued to "exhaustion" (rectal temp. of 108 F), the 11-OHCS levels continued to increase. When work was discontinued at exhaustion, the 11-OHCS levels tended to decrease but remained at a higher concentration than those measured during resting conditions.

254. GIBBS, Marilyn J. *The effects of participation in archery on the development of arm and shoulder girdle strength.* M.A. in Physical Education, 1969. 58 p. (N. P. Burke)
College women (N=62) were tested for arm and shoulder girdle strength at the beginning and end of an 8-week instructional period of archery. Measurements were taken using the hand dynamometer with the push-pull attachment and a cable tensiometer apparatus. Height and weight were also measured at the initial testing session. Archery skill performance was rated according to the Columbia Round score and corresponding hits as well as the total class score which were collected during the total instructional period. Statistical analysis showed significant gains in all pulling actions, whereas the pushing actions indicated nonsignificant gains. Intercorrelations were calculated for comparisons between individual variables of height, weight, strength of the arm and shoulders, and scores of archery performance. Results showed low but significant correlations existed between pulling strength and archery performance scores.

255. HOFER, Stephanie W. *The relationship between hip and shoulder strength and front crawl efficiency.* M.A. in Physical Education, 1969. 35 p. (M. G. Scott)
*S*s were 52 college women who had attained at the minimum an intermediate level of swimming. The following tests were used: Clarke's cable-

tensiometer tests for shoulder and hip extension strength, Leighton's ankle flexibility test, and the Fox Power Test. The only stroke tested was the front crawl. There was no significant relationship between shoulder extension strength or ankle flexibility and swimming efficiency. There was a significant relationship, however, between hip extension strength and efficiency, and it was found that females derived more power from the arm stroke than from the leg stroke.

256. KAUFMAN, David A. *Effects of various unilateral exercise programs on strength and work of contralateral muscle.* Ph.D. in Physical Education, 1969. 138 p. (G. M. Asprey and M. G. Fox)

The effects of different programs of unilateral resistance exercise on the strength and work of ipsilateral and contralateral abduction of the fifth finger at the metacarpophalangeal joint were compared. Also, by using the dominant and nondominant arm as the active arm, the effects of a 6-executions-maximum program of unilateral resistance exercise on the strength and work of the ipsilateral and contralateral arms for forearm flexion at the elbow joint were compared. Male college students (N=130) from physical-conditioning classes were randomly selected. Reliabilities of the various measurements ranged from .83 to .99. Results indicated that there was cross education for work in finger abduction at the fifth metacarpophalangeal joint for the normal, male, college-age population. This indicated that training by means of a discrete movement against heavy resistance will result in significant cross education in work.

257. KELLEY, Sharon L. *Personality characteristics of female high school athletes and nonparticipants in athletics.* M.A. in Physical Education, 1969. 119 p. (M. J. Barnes)

Ss included 209 SHS athletes and 206 nonparticipants in athletics. The California Psychological Inventory was used as the measuring device. The *t*-test was used to compare the means of athletes and nonparticipants on personality variables by class and trait. Results showed that the athletes were significantly higher ($P < .01$) than the nonparticipants on Class I — measures of poise, ascendancy, and self-assurance; the nonparticipants were significantly higher than the athletes on Class IV — measures of intellectual and interest modes. Athletes were significantly higher than nonparticipants on traits of dominance, sense of well-being, socialization, sociability, and self-acceptance. Nonparticipants significantly surpassed the athletes on the femininity trait.

258. KURTZMAN, Joseph B. *A critical analysis of the Canadian Intercollegiate Athletic Union.* Ph.D. in Physical Education, 1969. 442 p. (D. R. Casady)

The purposes of this study were to investigate the organizational problems facing the Canadian Intercollegiate Athletic Union (CIAU) from 1961 until 1966; analyze from a formal approach the organizational structure and the administrative functions of the CIAU; and suggest recommendations, based upon the goals of the CIAU, which may enable it to serve national intercollegiate athletics in Canada with increased effectiveness and efficiency. Some of the 11 principal conclusions and recommendations were: The conceptual tools utilized in the analysis proved to be useful and effective. The establishment of a commission-like structure for the CIAU would provide the organization with the power to represent member associations in dealing with other sports-

governing bodies. The role of the CIAU as a sports-governing body should be established, and affiliations with the national sports-governing bodies clarified. Athletic scholarships should be rejected by the CIAU because financial aid is inconsistent with the educational goals and the amateur status desired for intercollegiate athletes.

259. LANGTON, Russell G. *Concentric and eccentric strength training: Effects upon reaction time and movement time.* M.A. in Physical Education, 1969. 57 p. (L. E. Smith)

The relative effectiveness of eccentric versus concentric contraction strength training procedures and changes in static strength associated with changes in RT and MT were investigated. Male college students (N=78) were divided into 3 groups: concentric, eccentric, and control. Significant differences existed between the control group and each of the experimental groups on the following parameters: post-training MT, post-training strength at 110°, changes in MT, changes in strength at 110°, changes in strength at 135°, and changes in strength at 160°. No differences existed between the concentric and eccentric groups on any of the parameters investigated. Correlations between changes in MT and changes in strength revealed a significant relationship for the eccentric group at 110°. Concentric and eccentric contraction training were both effective means of improving static strength.

260. LITTLE, James R. *Charles Harold McCloy: His contributions to physical education.* Ph.D. in Physical Education, 1968. 257 p. (L. E. Alley and D. R. Casady)

Information was compiled from the data gathered from former students, acquaintances, and colleagues of Charles Harold McCloy. While there was not unanimity in the responses concerning McCloy's most significant contributions to PE, areas of accord were evident. Of immeasurable influence was McCloy's ability to inspire and motivate other physical educators to examine in a rational manner the problems that confronted them as members of the profession. McCloy's own life of seemingly endless and prodigious efforts to find answers to professional problems set a standard by which others could judge themselves. As such his life and accomplishments were greatly admired by many, but emulated by few. Of McCloy's scholarly contributions, his writings in the area of tests and measurements in HPE are paramount. The contributions in the area of the mechanical analysis of sports skills were among his earliest, and he continued these throughout his career.

261. LOUGHREY, Thomas James. *A comparison between results achieved in selected physical fitness tests and results achieved in modifications of the selected tests.* M.A. in Physical Education, 1969. 90 p. (P. L. Reuschlein)

One of the main purposes of this study was to determine whether the AAHPER pull-up test or the reverse grip pull-up test, on the basis of the correlation with the McCloy Strength Score, was the better indicator of upper body strength and should therefore be included in a physical fitness test battery. Seventh and eighth grade boys (N=95) served as *S*s. It was recommended that the one-minute sit-up test should replace the AAHPER sit-up test in the physical fitness test battery; the no-blocks shuttle-run test should replace the AAHPER shuttle-run test in a physical fitness test battery; more studies need to be undertaken to find a

test which adequately measures arm strength to be included in a physical fitness test battery; and further testing should be undertaken to determine whether the AAHPER 600-yd. run-walk test or the 300-yd. run-walk test, on the basis of the correlation with the one-minute squat thrusts test, is the better indicator of endurance and should be included in a physical fitness test battery.

262. MCLELLAN, Mary I. *An experiment using three films in rhythmical gymnastics using hand apparatus.* Ph.D. in Physical Education, 1969. 114 p. (M. G. Fox)

Following the development of the films, *Ss* used to evaluate the films as aids in instruction were sophomore and junior PE major students. These were divided at random into experimental and control groups, the former receiving instruction with the aid of films and the latter without the aid of films. A panel of 5 qualified judges was used to rate the final performance of *Ss* on 3 individual skill tests fo. each rhythmical gymnastic area. These ratings were summed and ranked. Nonparametric statistical procedures were used for final analysis. Significant differences were found in the performance in hoop skills in favor of the control and junior groups, although there appeared statistically to be little overall benefit in using films as aids to regular instruction in rhythmical gymnastics. Films such as the one developed for this study would be of greatest value to the inexperienced teacher with a limited background in the area of rhythmical gymnastics.

263. OETTING, Dennis D. *The effect of fasting for various periods of time on subsequent performance in the 880-yard run.* M.A. in Physical Education, 1969. 27 p. (G. M. Asprey)

The purpose of this study was to determine the effect 4 different fasting intervals (3 hr., 4½ hr., 6 hr., and 7½ hr.) between eating and running had on the time required to run 880 yards. The 8 male university *Ss* were from 19 to 25 years old. At about the same time each testing day, *Ss* ate a meal consisting of cereal, toast, butter, sugar, and whole milk. Results showed that no one of the 4 fasting intervals between eating and running had any more effect than any other on the time required to run 880 yards.

264. RANDLEMAN, Ronald J. *A study comparing the effectiveness of two putting styles for beginning golfers.* M.A. in Physical Education, 1969. 107 p. (P. L. Reuschlein)

The effectiveness of 2 putting styles, namely the wrist method and the arm method, was compared for beginning golfers. Following the initial test of the 61 *Ss*, a 6-week training program was conducted with practice sessions held 3 times a week for 25 min. each session, 15 min. of which were spent on actual putting practice. For inexperienced *Ss*, teaching one method of stroking putts, wrist or arm, was no better than the other method. For inexperienced *Ss*, teaching the wrist or arm method of putting was no better than allowing *Ss* to select their own method of putting. Inexperienced *Ss* made improvement in their putting skills after a period of supervised practice regardless of the putting method they used.

265. SMIDT, Gary Lee. *An electrogoniometric method for measuring pelvi-femoral joint motion during ambulation.* Ph.D. in Physical Education, 1969. 172 p. (G. M. Asprey)

The study was designed to evaluate an electrogoniometric method for obtaining pelvi-femoral joint motion measurements in the sagittal, coronal, and transverse planes for free, slow, moderate, and fast forward linear ambulatory velocities. There were statistically significant ($P < .05$) differences between the means of any 2 of the 3 ambulatory velocities for pelvi-femoral motion measures obtained in the sagittal, coronal, and transverse planes. The electrogoniometric method for measuring pelvi-femoral motion employed in this study was appropriate for experimental use and the method was best suited for obtaining measurements in the sagittal plane. Demands for pelvi-femoral motion in the sagittal plane were positively related to forward linear ambulatory velocity. The stride-length/lower-extremity-length ratio was a significant factor for consideration in the study of hip motion during ambulation.

266. TAYLOR, Rosalind K. *The effect of influences and attitudes on an elective physical education curriculum.* M.A. in Physical Education, 1969. 94 p. (J. L. Scahill)

A questionnaire regarding factors which influenced selection of activities and the Plummer Attitude Scale were administered to 562 women students, mostly freshmen, who were enrolled in 13 different PE activities. The hockey class had a negative attitude toward PE and the major reasons for their selection of that activity were that their other preferences were closed, it worked into their schedule at the best time, and it was a process of elimination of the other available classes. Judo, with the highest mean attitude, was chosen foremost for the fact that the students thought they would enjoy the activity. Influences regarding selection of activities and attitudes toward PE were found to be closely related.

267. TUFTS, Sharon A. *The effects of diet and physical activity on selected measures of college women.* Ph.D. in Physical Education, 1969. 122 p. (M. G. Scott)

Ss were overweight college women, ages 18 to 22, who were enrolled in a weight control class. Measures included skeletal diameters, skinfolds, weight, body fat percent, arm strength, body image, and movement concept. *Ss* were expected to follow a 1,000 calorie diet. They participated in the weight control class 35 min. a day, 4 days a week for a semester. Activity included calisthenics, folk dancing, jogging, basketball, badminton, circuit training, hiking, and variations of other sports. Correlations between circumferences of the buttocks, thigh, and shoulders with body weight were better than .95. Upper arm girth best correlated with body fat. Triceps and scapular skinfolds best correlated with body weight and the suprailiac skinfold with percent body fat. Significant differences were found between initial and final measures of circumferences, skinfolds, body image and movement concept, body weight, and body fat percentage.

268. WEINBERG, Herman. *Effects of stretching antagonistic muscles on power.* M.A. in Physical Education, 1967. 31 p. (G. M. Asprey)

The purpose of this study was to determine the effects of stretching antagonistic muscles on power, as measured by the time needed to extend the

weighted leg a measured distance. These results were compared to those obtained as a result of strengthening the agonists through isometric contractions. The 53 college men were randomly assigned to three groups, which were randomly assigned to one of 3 programs: Stretch Group — exercises designed to stretch the hamstring muscles; Strength Group — exercises designed to strengthen the extensors of the knee; Control Group — no exercise program. Analysis of the differences between initial and final means revealed negative differences for all groups. No gains in power were incurred from a program of stretching antagonistic muscles or strengthening agonistic muscles through isometric contractions.

269. WINTER, Anne J. *Adaptation to prismatic displacement as a function of target distance and direction of turn.* Ph.D. in Physical Education, 1969. 45 p. (M. G. Scott)

The influence of target distance and direction of the turn in a 15-min. prism exposure on the magnitude of adaptation when a test of "kinesthetic straight ahead" was used to measure the adaptive aftereffect was determined. Female PE majors (N=96) were divided into 12 treatment combinations and 8 cases per group. The 3 between-*S*s treatments were target distance, direction of turn, and prism bases. There was a consistent and significant positive adaptive aftereffect indicated for all mean differences for kinesthetic straight ahead performances for each of the 12 subgroups. However, targets placed closer to *S* were not more effective in leading to a modification of the walking response than were targets placed at a greater distance. The direction of turning with or turning against the prism bases was effective in influencing the amount of adaptive effects on the kinesthetic straight ahead response; the effect was greater if turning against the prism distortion.

University of Kansas, Lawrence, Kansas (W. H. Osness)

270. BLISS, Donald C. *A comparative study of two types of physical conditioning programs.* M.S. in Physical Education, 1969. 40 p. (W. J. Mikols)

271. CHRISTENSEN, Patricia R. *The attitudes and interests toward physical education of high school girls at Shawnee Mission North High School.* M.S. in Physical Education, 1969. 104 p. (W. H. Osness)

272. CLARK, James H. *Recovery heart rate response in wrestlers after actual competition.* M.S. in Physical Education, 1969. 55 p. (W. H. Osness)

273. EVERS, Ann W. *A study to determine the effectiveness of videotape and verbal information feedback methods in teaching the tennis serve.* M.S. in Physical Education, 1969. 98 p. (W. H. Osness)

274. FRYE, Kenneth A. *A study of certain aspects of the large successful high school track and field programs in the United States.* M.S. in Physical Education, 1969. 76 p. (W. H. Osness)

275. HAMMERSMITH, Veronica A. *An evaluation of cardiac activity in young women as spectators and participants in competitive basketball.* M.S. in Physical Education, 1969. 84 p. (W. H. Osness)

276. HARRELL, Thomas W. *The effects of dextra amphetamine sulfate on reaction time.* M.S. in Physical Education, 1969. 56 p. (W. H. Osness)

277. HARRISON, Jane. *The evaluation of the women's intramural program at Ritenour Senior High School.* M.S. in Physical Education, 1969. 104 p. (W. H. Osness)

278. LAMB, William H. *A cinemagraphical analysis of the javelin throw.* M.S. in Physical Education, 1968. 110 p. (W. H. Osness)

279. MOORE, Susan M. *Personality traits of physically active, moderately active, and inactive college women.* M.S. in Physical Education, 1969. 98 p. (W. H. Osness)

280. NEWTON, Grundy E. *A study of age, height, weight, and somatotyping in relationship to AAHPER youth fitness test.* 1969. 85 p. (W. H. Osness)

281. PETERSEN, Donald C. *A comparative application of the sixteen-inch foot spread to the rocket sprint start.* M.S. in Physical Education, 1969. 40 p. (W. H. Osness)

282. PINE, Marvin E. *A comparison of fitness and attitudes of children taught by a specialist and by classroom teachers.* M.S. in Physical Education, 1969. 59 p. (W. H. Osness)

283. PLEIN, Linda M. *A comparison of motor abilities of mentally retarded visually handicapped and mentally retarded sighted children.* M.S. in Physical Education, 1968. 222 p. (W. H. Osness)

284. REPLOGLE, Max C. *The influence of the distribution of the force exerted on starting blocks in relation to the time required to run ten yards.* M.S. in Physical Education, 1969. 39 p. (W. H. Osness)

285. SIMONS, Jeffrey C. *A comparison of changes in explosive power and horsepower between a basketball trained group and a physical education trained group.* M.S. in Physical Education, 1969. 44 p. (W. H. Osness)

286. URBAN, Richard J. *Football knee injuries in selected high schools in the State of Kansas.* M.S. in Physical Education, 1969. 42 p. (W. H. Osness)

287. WILLIAMS, Ruth M. *A study of the physical activity of adolescent girls under varying nutritive conditions.* 1969. (W. H. Osness)

288. WISNER, Frances L. *A study of two types of warm-up activities for a junior high school girls physical education program.* M.S. in Physical Education, 1969. 90 p. (W. H. Osness)

Kent State University, Kent, Ohio (P. M. Ribisl)

289. BLOSSER, Thomas G. *An electromyographic study of the role of vastus medialis muscle in selected rehabilitative isometric exercises.* M.A. in Physical Education, 1969. 136 p. (R. R. Bos)

An electromyographic evaluation of the vastus medialis and vastus lateralis muscles during isometric contraction was conducted with 16 adult male *Ss*. The electromyographic activity of the 2 muscles during 3 rehabilitative isometric exercises was compared with the electromyographic activity during isometric cable tension tests. The cable tension tests were conducted at both 10° and 70° of knee joint flexion during maximal extensor contractions, 60% of maximum and 20% of maximum. Both surface electrodes and intramuscular fine wire electrodes were used. During both the rehabilitative isometric exercises and the standard cable tension tests, the vastus medialis muscle was more active than the vastus lateralis muscle. Electromyographic activity of both muscles during the rehabilitative isometric exercises compared favorably with the 60% level of contraction during the standard cable tension tests at both angles of knee flexion. Both the externally applied force and the internal muscle tension correlated highly with the electromyographic activity.

290. HERBERT, William G. *The effect of dehydration and subsequent rehydration on the physical working capacity of college wrestlers.* M.A. in Physical Education, 1969. 77 p. (P. M. Ribisl)

Changes that occur in physical working capacity (PWC-170) with dehydration and subsequent rehydration were measured in 9 college wrestlers during 2 separate weeks of the competitive season. The PWC-170 was measured under the following body weight conditions: normal, at the beginning of the week; dehydrated, at the weigh-in period on the day of competition; and rehydrated, just before competition. Mean weight deficits were 4.8% and 2.2% in the dehydrated and rehydrated conditions, respectively. Working capacity was significantly reduced following both dehydration and rehydration, although a significant improvement occurred between the dehydrated and rehydrated states. A moderate relationship was found between weight deficit and degree of impairment in working capacity ($r = .47$). Depressions in the PWC-170 were interpreted as decreases in maximum performance capacity and were attributed to circulatory inefficiency. Wrestlers who dehydrated 5% to make their weight classifications and then did not completely rehydrate before meet time experienced significant reductions in work capacity during competition.

291. LOWE, Donald Douglas. *The reliability of cable tension strength tests and strength levels of collegiate football players at the shoulder and knee joints.* M.A. in Physical Education, 1969. 93 p. (R. R. Bos)

The reliability of selected muscular strength tests at the knee and shoulder joints and muscular strength of college football players at these 2 joints were determined and related to body surface area and 4 skinfold fat measures. *Ss* were 34 volunteers from the 1967 varsity football team at Kent State University and 11 volunteers from a PE weight training class. A modified Clarke testing table was used in this study and cable tensiometers were selected as the instruments to record the

applied muscular force. Eight isometric shoulder strength tests were given along with 2 isometric knee strength tests. Four skinfold fat measures, height, weight, and body surface area were determined so that correlations between these items and each strength test item could be determined. Sixteen of the 20 test items utilized were reliable. Based on reliability coefficients and correlations with total strength, shoulder flexion, shoulder extension, and knee extension would be a good 3-item test battery to indicate total strength as measured by the 20-item test battery.

292. McFARLAND, Robert L. *A comparison of the effects of continuous and intermittent running on the cardiovascular fitness of adult men.* M.A. in Physical Education, 1969. 149 p. (L. A. Golding and P. M. Ribisl)

Ss participated in 8 weeks of pretraining, then were divided into 2 groups for 18 weeks of continuous (N=6) or intermittent (N=9) running training. Thirty min. training sessions were held 3 days per week. Resting heart rate, maximal heart rate, Schneider Index, 1-min. step test, and maximal oxygen uptake were measured before and after the training programs. Substantial improvements were made by both groups with their respective training methods. Post-training resting and maximal heart rates were significantly lower for both groups. No statistically significant differences between the 2 groups were found for any measurement either before or after training. Both training methods appeared to be comparable for improving cardiovascular fitness. However, the continuous group did perform much better than the intermittent group in a 2-mile run for time at the end of the study, which could be attributed to the specificity of their training.

293. WILSON, Janice L. *Typical social characteristics and common values displayed by club tennis players in northeastern Ohio.* M.A. in Physical Education, 1968. 149 p. (B. G. Hartman)

A questionnaire was completed by 199 adults who were members of clubs belonging to the Northeastern Ohio Tennis Association. Conclusions included: a description of the typical person who played tennis as to age, sex, descent, religion, marital status, education, income level, and participation in organizations; reasons for playing tennis, such as fitness benefits, weight control, outdoor recreation, and skill achievement; and values actually obtained as a result of playing tennis. If a person believed his value ends would be met by playing a particular sport, he was likely to participate in that sport; and in this study, 3 of the top 5 reasons for playing tennis were also values which actually resulted from playing that sport.

Lamar State College of Technology, Beaumont, Texas (M. J. Haskins)

294. KRAUSE, Marilyn A. *A comparison of personality factors of women intercollegiate team and individual sports participants.* M.S. in Health and Physical Education, 1969. 57 p. (M. J. Haskins)

Women (N=87) intercollegiate sports participants from 6 colleges and universities were classified as individual or team sports participants and compared using the California Test of Personality. A significant difference between the means was found in total adjustment, social adjustment, and the components of personal worth and family relations. The individual sports group scored higher than the team sports group on all components tested.

295. PARK, Patricia A. *A status and opinion study of the effect of the United Golf Association amateur rule on women professional and amateur golfers, and women physical education instructors of golf.* M.S. in Physical Education, 1969. 75 p. (M. J. Haskins)

296. REEVES, Patricia. *An investigation of the ability to predict performance of an untried motor task.* M.S. in Health and Physical Education, 1969. 107 p. (M. J. Haskins)

The purpose of this study was to determine the ability to predict performance of a motor task when there were no past experiences perceived which could give clues upon which to base expectancy. The major concerns explored relative to the untried tasks were: expectancy reports, performance, anxiety levels in predicting untried task performance, attitudes toward PE, social status, and ego-strength. It was found that an individual can predict an untried performance, and that some *S*s consistently predict with much greater proficiency than others. Data gathered from the supplementary tests indicated social status and anxiety to be major concerns associated with level of expectancy, but not with the proficiency with which *S*s predicted.

297. VINCENT, Verona. *Personality factors of competitors and noncompetitors in athletic activities.* M. Ed. in Secondary Education, 1969. 54 p. (M. J. Haskins)

The Opinion, Attitude, and Interest Survey, measuring academic promise, psychological adjustment, and educational-vocational interest, was administered to an athlete group and a nonathlete group. Athletes scored significantly higher in emotional and social adjustment, and the nonathletes scored significantly higher in humanities interest. Two scales, Masculine Orientation and Biological Science Interest, closely approached significance with the athletes scoring higher than the nonathletes, while no significant differences were shown for the scales of Achiever Personality, Intellectual Quality, Creative Personality, Interest in Business, Social Sciences and Physical Sciences.

Los Angeles State College, Los Angeles, California (J. Terauds)

298. TERAUDS, Juris. *Change in sprinting velocity of college men.* M.A. in Physical Education, 1964. 44 p. (J. G. Crakes)

By means of cinematography, 19 Ss from California State College at Los Angeles were tested in sprinting ability. Results indicated that maximum velocity could be reached by all individuals over a distance varying from 20 to 50 yds., maximum velocity could be maintained over a distance covering 40 to 70 yds., and deceleration commenced at 70 to 110 yds. from the starting line. The mean distance over which maximum velocity was maintained for all runs was 52.5 yds., while the mean deceleration before reaching 100 yds. was 5.4% of the mean maximum velocity.

Louisiana State University, Baton Rouge, Louisiana (J. K. Nelson)

299. BETER, Thais R. *The effects of a concentrated physical education program and an auditory and visual perceptual reading program upon academic achievement, intelligence, and motor fitness of educable mentally retarded children.* Ed.D. in Physical Education, 1969. 125 p. (F. A. Drury)

Forty educable mentally retarded JHS boys and girls were placed in 4 programs: a combined program of concentrated PE and auditory and visual perceptual reading; PE and classroom instruction; special reading and classroom instruction; and traditional special education classroom instruction. Tests of vocabulary and reading comprehension, reading achievement, arithmetic and spelling, intelligence, and motor fitness were given initially and following a 27-week instructional program. Findings were that concentrated PE significantly improved motor fitness; significant improvement in reading comprehension and arithmetic was found in the program of concentrated PE and auditory and visual perceptual reading and in the traditional classroom instruction program; and the traditional classroom instruction program was superior in improving reading vocabulary.

300. BOUDREAUX, John P. *A comparison of selected factors in fiberglass pole vaulters and pre-fiberglass pole vaulters.* M.S. in Physical Education, 1969. 46 p. (J. K. Nelson)

Vaulting techniques and physical characteristics of 27 outstanding fiberglass pole vaulters were compared with 27 vaulters who used the bamboo or metal poles. Information for the first group was obtained by questionnaire; for the latter group by a survey of literature. The findings revealed no significant differences in height, weight, running speed, or push-off distance between the 2 groups. The fiberglass vaulters were found to have used significantly higher and more effective handgrips. This was concluded to be the main advantage of the fiberglass pole. It was shown that this increased handgrip distance was almost exactly the same distance as the difference in vaulting heights between the 2 groups.

301 CHALOUPKA, Larry J. *Analysis of generality or specificity of level of aspiration in selected psychomotor and cognitive tasks.* Ed.D. in Physical Education, 1969. 117 p. (H. E. Fant)

Eighth grade male students (N=90) were tested for level of aspiration on 2 gross psychomotor tasks, 2 fine psychomotor tasks, and a cognitive task. *Ss*' motor ability scores were determined by the Barrow Motor Ability Test. Academic ability scores were obtained from standardized achievement test scores, academic promise scores, mental ability scores, and from grade point average. Some evidence of generality of levels of aspiration in psychomotor and cognitive tasks was found. However, levels of aspiration were found to be specific to the psychomotor and cognitive tasks when *Ss* were classified according to motor ability or academic ability. There was no significant relationship between levels of aspiration and performance on the tasks. Motor ability was generally not related to academic ability, nor was grade point average found to be highly related to standardized academic ability scores.

302. CROWDER, Vernon R. *A study to determine the effects of the sauna bath on cardiovascular efficiency.* Ph.D. in Physical Education, 1969. 53 p. (F. A. Drury)

Three experimental groups and a control group consisting of college males (N=52) were formed. One group trained by running for 15 min. per day; one group by sitting in a sauna for 16 min. a day; and the third experimental group by running for 15 min. followed by a 16-min. sauna. The Harvard Step Test was given before and after a 6-week training program. Pulse rates and body temperatures were recorded regularly. The 3 experimental groups gained significantly in cardiovascular efficiency; the control group did not. A 2-factor analysis of covariance revealed that running plus sauna did not result in greater improvement in cardiovascular efficiency or sauna alone.

303. DELACERDA, Fred G. *The comparative effects of three methods of training on vertical jumping ability.* M.S. in Physical Education, 1969. 54 p. (R. E. Steben)

SHS boys (N=67) were assigned to 4 groups: one group exercised using the Rebounder for jump training; one utilized isometric training; one used the Exer-Genie; and one served as a control group. All groups participated in their regular PE activities. *Ss* were tested on the vertical jump before and after a 6-week, 3-day per week training program. All groups gained significantly. No differences were found between the isometric group and the control group, nor between the jump training group and the Exer-Genie group. The mean gains of the latter 2 groups were significantly greater than the mean gains of the control and isometric groups.

304. EDGAR, Harold S. *The effects of rest during a selected progressive resistance exercise on the acquisition of strength and muscular endurance.* Ed.D. in Physical Education, 1969. 104 p. (R. E. Steben)

Nine groups of college men (N=108) were tested for strength and muscular endurance initially and at the end of 5 and 10 weeks of training. All groups performed 3 sets, 10-RM each set, of the supine press, 2 days a week. The difference in the training programs was the length and/or placement of rest periods between sets. The rest periods were either 1,

5½, or 10 min., placed at the end of the first set only, at the end of the second set, or at the end of the first and second sets. Significant gains in strength and muscular endurance were made by all groups. No advantage was realized by varying the length and/or placement of rest periods.

305. ELROD, Joe M. *Construction of a softball skill test battery for high school boys.* M.S. in Physical Education, 1969. 67 p. (J. K. Nelson)

Sixty SHS boys were given 4 softball skill tests devised by the author: fielding ground balls and throwing to first base; batting; catching fly balls; and base running. The criterion consisted of experienced judges' ratings on overall softball playing ability. Step-down multiple regression was used to determine the order of contribution of the items in predicting the criterion. Reliability coefficients were obtained. It was found that the 4-item battery was a valid indication of softball ability. Fielding ground balls and throwing was the single item which contributed most to the criterion.

306. HALEY, Betty B. *The effects of individualized movement programs upon emotionally disturbed children.* Ed.D. in Physical Education, 1969. 201 p. (H. E. Fant)

The case study method was used to determine whether emotionally disturbed children between the ages of 7 and 15 would benefit from individualized movement programs with regard to motor development and improvement in overt psychosocial behavior. Sources of data were daily observations; pre- and post-evaluations by social workers, psychiatrists, and classroom teachers; questionnaires to parents; interviews; and pre- and post-tests of psychosocial behavior and motor development. All *Ss* were found to improve in varying degrees in certain motor skills. Planned activities seemed to bring about a release of energy whereas aimless activity appeared to promote hyperactivity. Self-confidence and improved group adjustment were observed to be facilitated by achievement in motor skills. It was concluded that individualized movement programs were feasible in a clinical setting, and that individualized programs should precede group programs.

307. HARLESS, Ivan L., III. *A comparison of improvement of selected motor skills utilizing two instructional methods.* Ed.D. in Physical Education, 1969. 62 p. (F. A. Drury)

College women (N=180) enrolled in beginning badminton, golf, and tennis were randomly assigned to control and experimental groups. The 2 methods of instruction consisted of conventional instruction, and videotape recordings used in conjunction with conventional instruction. Skills were the overhead forehand clear in badminton, the full swing with an iron in golf, and the forehand ground stroke in tennis. Each skill was attempted 3 times and recorded on video tape. The students in the control group received conventional analysis of their performance with neither the student nor the teacher seeing the recording. *Ss* in the experimental group received verbal analysis while viewing the video tape. Then the skill was attempted again. This was also recorded and a panel of judges viewed the pre- and post-analysis performances and rated the amount of improvement. It was concluded that both methods were equal in their ability to assist in improving performance regardless of the stage of instruction at which they are used.

308. HOLLINGSWORTH, Barbara. *A comparison of sportsmanship in high school female athletes and nonathletes.* M.S. in Physical Education, 1969. 56 p. (M. E. Moore)

The Haskins' Action-Choice Test for Competitive Sports Situations was given to 199 SHS female athletes and 220 nonathletes. Comparison between the athletes and nonathletes indicated that the nonathletes scored higher in sportsmanship than did the athletes. There were no differences in sportsmanship scores among athletes who were participating in their first, second, third, and fourth seasons. It was concluded that participation in athletics does not improve attitudes regarding sportsmanship as measured by a sports situation test.

309. LEE, Amelia. *Motor performance of children taught by special physical education teachers for the first, second, or third year and by classroom teachers.* M.S. in Physical Education, 1969. 100 p. (M. E. Moore)

Tests of leg power and jumping ability, strength and endurance of the arms and shoulders, hand-eye coordination, agility, throwing for distance, and running speed were administered to 320 sixth grade boys and girls before and after a 4-month instructional period. Comparisons were made between the performances of the boys and girls and among the 4 groups classified as to students taught by the classroom teacher and students taught by a specialist for 1, 2, and 3 years. All groups showed significant gains in all tests. The boys surpassed the girls in gains made in leg power, agility, and throwing for distance. A significant regression pattern was found indicating that the gains in hand-eye coordination and agility generally increased in accordance with the number of years the students had been taught by a specialist. No differences were found among the groups in the gains made in running, arm and shoulder strength, leg power, and throwing for distance.

310. MOTT, Mary L. *Motor performance as affected by varied structural environments.* Ed.D. in Physical Education, 1969. 62 p. (J. K. Nelson)

Four target situations involving various degrees of enclosure were utilized. One target had no vertical structure in the immediate vicinity; one had a wall directly behind the target; one had sides but was open behind the target; and the fourth had both sides and a back. Using a counterbalanced practice order, college women (N=72) were scored as to distance and accuracy of throwing a ball at each of the targets. Targets having backs produced significantly longer throws than targets without backs. With regard to distance, these throws were also closer to the center of the target. The addition of sides to an open target improved distance performance, but adding sides to a target with a back did not improve performance over the effects of the back alone. There were no differences in accuracy performance, as measured by deviation from center, under the 4 conditions.

311. PURDY, Kenneth M. *Techniques of photography in physical education research.* Ed.D. in Physical Education, 1969. 105 p. (F. A. Drury)

The study was designed to provide the PE researcher with a basic understanding of how the camera can be used to aid analysis and presentation

of photographic material. Techniques were presented and critically analyzed, and recommendations were made with regard to such factors as properties of film, exposure readings, latent grid techniques, chronocyclography, stroboscopic and single flash photography, filmstrip production, and graphic arts display. Uses and limitations of the 8 mm and 16 mm procedures for determining framing rate, use of the variable shutter, and many other aspects of motion picture techniques were also presented. In analyzing the various problems involved in still and motion picture photography, the most effective techniques were discussed and demonstrated through photographs and illustrations from research projects and camera work done by the author.

312. SLAY, Billy B. *A comparative analysis of recovery heart rates from two types of workbouts on trained and untrained subjects.* Ed.D. in Physical Education, 1969. 109 p. (F. A. Drury)

Thirty cardiovascularly fit and 30 unfit male *Ss* exercised on the treadmill under 2 conditions. In the short workbout a heart rate of 180 beats/min. was reached in less than a minute; in the long workbout 15 min. of running were required to produce this heart rate level. Recovery heart rates were recorded by a cardiotachometer every minute for 15 min. afte: exercise. For both groups, the short workbout produced a higher heart rate recovery pattern than did the long workbout. Unfit *Ss* had higher resting heart rates and higher rate recovery patterns for both exercise bouts than did fit *Ss*.

313. SPEARS, Carolyn D. *Analysis of physiological effects on college women of two programs of regular exposures to extreme heat.* Ed.D. in Physical Education, 1969. 76 p. (J. K. Nelson)

Pulse rate, body temperature, rate of respiration, body weight, systolic pressure, diastolic pressure, pulse pressure, and metabolism were recorded for 23 college women to determine the long-range effects and adjustments by the body to 2 programs of exposure to extreme heat. Group I trained in the sauna 3 days a week and Group II for 2 days a week over a 12-week period. Body resting states were established during the first, sixth, and twelfth weeks. Weekly measurements were also taken. Resting pulse rate, systolic and diastolic pressure, body temperature, and metabolism were lowered significantly during the 12-week period for the 3-day-per-week group, but not for the 2-day-per-week group. These changes were temporary and were quickly lost when the training program was interrupted.

314. STAFFORD, Beverly L. *The effects of age and sex on the level of aspiration in selected motor tasks.* Ed.D. in Physical Education, 1969. 83 p. (M. L. Life)

Motor tasks considered to be male-oriented, female-oriented, or neutral were given to 120 boys and 120 girls enrolled in grades 3, 6, 9, and 12. Six tasks were given to all *Ss*. Grip strength and a jump test were designated as male-oriented; the hopscotch and stork balance were designated as female-oriented; and an object replacement task and the Cassell Group Level of Aspiration Test were considered as common tasks. Aspiration-discrepancy scores, i.e., the difference between performance and expected score, were computed and comparisons were made among the groups. No significant differences in levels of aspiration were found between boys and girls on any of the tasks. Age was a factor in level of aspiration in that older *Ss* tended to be more realistic in goal setting than younger *Ss*.

315. STERLING, Duane R. *Isometric strength position specificity resulting from isometric and isotonic training as a determinant in performance.* Ph.D. in Physical Education, 1969. 103 p. (F. A. Drury)

College men (N = 120) were randomly assigned to 5 groups: Groups I, II, and III trained using a single isometric contraction at 95°, 125°, and 155° knee extension, respectively. Group IV trained isotonically from 90° through 180° of knee extension. All groups trained 3 days a week. Group V served as control. *Ss* were tested before and after the 6-week training period on isometric strength at 95°, 125°, and 155° knee extension; on isotonic strength from 90° through 180°; and on vertical jumping ability. The experimental groups realized significant gains in isometric strength at the 3 angles tested, the isotonic strength test, and in vertical jumping ability. Position selectivity was found at the 95° angle, with the group training at this angle being superior to the other isometric groups at this angle. No differences were found at the 125° or 155° angles. Thus, training at 95° was found to be the best isometric training position. The isotonic group was superior in developing isotonic strength. No differences were found among the groups in jumping performance.

Mankato State College, Mankato, Minnesota (R. B. Moore)

316. RAYMOND, Lloyd E. *Identification of the important characteristics of potential college basketball players.* M.S. in Physical Education, 1969. 69 p. (R. D. Gorman)

Basketball coaches from 4 classes of institutions were surveyed in an attempt to identify those characteristics coaches deemed most important in recruiting potential SHS athletes. The 4 classes of institutions were: state universities, private universities, state colleges, and private colleges. Thirty-seven characteristics were organized under 5 categories: attitude and personality, playing experience, physical qualities, mental ability, and financial need. Mean ratings were determined for each characteristic and each category. No significant difference was found between the types of institutions and the qualities looked for in the recruiting practices.

317. WOLD, Allan H. *The effect of a systematic conditioning program on body density and anthropometry of varsity high school basketball players.* M.S. in Physical Education, 1969. 50 p. (R. D. Gorman)

Ten anthropometrical measurements were taken on 20 varsity SHS basketball players at both the preseason and postseason periods of training. The anthropometrical measures were: height, weight, and 8 skinfold and corrected diameters of the limb measurements. Body density (by underwater weighing method) and percent of body fat were also calculated. The effects of a systematic conditioning program, maturation, and practice during the season were determined. The means for the preseason to postseason changes showed no significant differences in the following 7 measurements: subscapular skinfold, umbilical skinfold, dorsal upper arm skinfold, calf skinfold, corrected diameters of the upper arm, forearm, and calf. Significant differences were found between the means of the preseason and postseason measurements in height, weight, iliac skinfold, ventral upper arm skinfold, forearm skinfold, thigh skinfold, corrected diameter of the thigh, body density, and percent of body fat.

University of Maryland, College Park, Maryland (G. A. Stull)

318. ASCOLI, Kenneth M. *Proactive interference in short-term motor retention.* M.A. in Physical Education, 1969. 60 p. (R. A. Schmidt)

The present investigation was conducted to determine if proactive inhibition (PI), commonly found in verbal short-term memory (STM), is also present in motor STM. Blindfolded *S*s (N=72) moved a slide along a track until contacting a stop which defined the criterion position. Three sec. later, *S*s released the slide, starting a retention interval of either 10 or 120 sec. during which E returned the slide to the starting position. After the retention interval, *S* regrasped the slide and estimated the criterion position without the aid of the stop. PI was manipulated by the number of different positions (0, 2, or 4) presented prior to the criterion position in a 2×3 design. *S*s with previous responses moved to positions differing from the criterion by 5 or 10 cm, holding each position for 3 sec. The time between successive previous positions was 10 sec., and 10 sec. after the last previous position, the criterion position was presented. Both retention intervals and the number of previous positions were significant variables with 4 previous positions resulting in greater absolute error and greater undershooting with algebraic error than either 0 or 2 previous positions.

319. BUGYI, George J. *The effects of moderate doses of caffeine on fatigue parameters of the forearm flexor muscles.* M.A. in Physical Education, 1969. 55 p. (D. H. Clarke)

Male *S*s (N=25) were randomly administered 0 (control), 167 mg, 324 mg, and 500 mg of citrated caffeine. After one hour absorption time they were given exercise on a hand-grip strain gauge ergograph consisting of single maximal contractions for 6 min. at a rate of 30/min. No significant differences occurred for the variables initial strength, final strength, fatigable work, and total work. Analysis of rates of fatigue showed a reduction for the 500 mg dose, suggesting a possible lessening in overall rate of fatigue at this level.

320. BUNDSCHUH, Ernest L. *The effect of water immersion at varying temperatures upon muscular fatigue and recovery of the forearm flexor muscles.* Ph.D. in Physical Education, 1969. 147 p. (D. H. Clarke)

The effects of 10, 14, 18, 22, 26, and 34 degrees C water temperature were studied on 31 male *S*s engaging in hand contractions for 6 min. given at a rate of 30/min. Recovery was also studied for 10 min. after exercise, and forearm skin temperature was taken continuously during the preliminary 10 min. of cooling time, as well as during exercise and recovery. Initial and final strength were unaffected by the environmental conditions, while total work at the 2 lowest temperatures was significantly improved. Colder temperatures caused slower fatigue rates, but did not alter recovery. Thus, temperature affected those variables indicative of endurance rather than strength.

321. CHRISTINA, Robert W. *Proprioception as a basis for the anticipatory timing of motor responses.* Ph.D. in Physical Education, 1970. 135 p. (D. H. Clarke)

Differences between the proprioceptive trace and the proprioceptive input hypotheses were examined, as well as the hypothesis that increasing levels of movement-produced feedback result in more efficient anticipatory timing performance. A right-hand timing task was given which involved anticipation (with no preview) of the coincidence of a moving pointer with a stationary one. Minimum, moderate, and maximum levels of feedback were indirectly produced in the left arm by having *S*s (N=90) make a minimal movement, a large linear movement, or a large linear movement with added resistance. Moderate and maximum levels of feedback were administered prior to and during the 2.0 sec. right-hand timing task. The present findings were unable to distinguish between the 2 hypotheses. However, response consistency of the right hand was greater for a larger left-arm movement than for a minimal one, which supported the notion that proprioceptive stimuli can serve as a basis for the anticipation and timing of motor responses.

322. COOPER, Leonard A. *Responses of selected physiological variables of prepubescent and pubescent boys during submaximal and maximal tests of physical working capacity.* Ph.D. in Physical Education, 1969. 301 p. (D. H. Clarke)

Sixty-two boys, aged 9 and 15 years, performed several tests of cardiovascular performance, and were measured during rest, exercise, and recovery for heart rate, blood pressure, oxygen intake, carbon dioxide elimination, pulmonary ventilation, and respiratory exchange ratio. Pubescent boys consistently demonstrated a significantly greater functional economy during rest and exercise than prepubescent *S*s, and possessed a greater capacity to restore internal equilibria following exercise. Physical working capacity was found to increase with age, weight, and body surface area. Heart rate, systolic blood pressure, oxygen intake, carbon dioxide elimination, and ventilation tended to increase linearly with work intensity to crest load for both groups. No apparent useful relationship existed between maximum working capacity and heart rate or oxygen intake measured during recovery. No evidence was found of physiological instability in the 15-year-old group which might have been associated with pubescence.

323. COULSON, Louis Theodore, III. *The effects of forced withdrawal of an ergogenic aid (wheat germ oil) on the bicycle ergometer riding times of collegiate athletes.* M.A. in Physical Education, 1969. 76 p. (B. F. Husman)

Thirty-six prospective members of the 1969 University of Maryland lacrosse team were randomly assigned to 5 experimental groups as follows: placebo for the entire experimental time; wheat germ oil for the entire experimental time; wheat germ oil for 4 weeks followed by a placebo for 4 weeks; wheat germ oil for 4 weeks, followed by cessation of the aid; and neither wheat germ oil nor placebo. During an 8-week experimental period in which a program of interval training gradually increased in intensity, *S*s were tested 5 times on a Monark Crescent bicycle ergometer. The first measure constituted a pretest followed by 4 evaluations at biweekly intervals. The 5 groups significantly increased their bicycle

ergometer riding times, but forced withdrawal of wheat germ oil had no significant effect on performance. The administration of wheat germ oil did not significantly affect bicycle ergometer riding time.

324. HUBER, Joseph H. *A comparison of massed and distributive practice time of brain-damaged children in learning and retaining a fine motor performance activity.* M.A. in Physical Education, 1969. 111 p. (B. F. Husman)

Male and female brain-damaged children (N=22) were randomly divided into 2 groups for a 5-week experimental period and a retention test given 10 weeks after the post-test. The distributive practice group met 3 times a week for a 4-min. learning session, while the massed practice group met once a week for a 12-min. learning session. Results on the pursuit rotor indicated that the massed and distributed groups finally approached approximately the same performance asymptote. The groups did not differ significantly from each other in the rate of learning or retention; nevertheless, the rate of learning within each group was significant over the 5-week period. The post-test and retention scores differed significantly, disclosing that approximately one-third of the time on target learning that occurred was forgotten at the 10-week retention check.

325. KAHNERT, John H. *The relationship of selected components of physical fitness to physical fitness knowledge and attitude expressed toward physical fitness of male college students.* Ph.D. in Physical Education, 1969. 217 p. (M. H. Eyler)

A sample of 402 male college students enrolled in required PE classes was tested in selected components of physical fitness, a physical fitness knowledge test, and an attitude vehicle (after the Likert technique). Selected components of physical fitness related significantly to: physical fitness knowledge, and to attitude expressed toward physical fitness. Physical fitness and knowledge related significantly to attitude expressed toward physical fitness. Such relationships, although significantly different from zero, were considered to be too low to be of value for predictive purposes.

326. KENNARD, June A. *Maryland colonials at play: Their sports and games.* M.A. in Physical Education, 1969. 102 p. (M. H. Eyler)

The purpose of this research was to study the sports and games associated with the cultural life of Maryland colonials. It was found that they loved to play, to the dismay of the legislators. Varied and abundant wildlife enabled the colonials to adopt a standard of living beyond that of mere existence. In a land of plenty, fish and land game became sporting symbols and not simply symbols of survival. Horse racing, yachting, fox hunting, and the playing of card games and billiards comprised an integral part of the planter social scene. The crudity of early colonial life hindered the development of highly organized sports, while the latter portion of colonial life produced more finesse in amusements. One could describe the colonial Marylanders as productive, vigorous, and definitely gay.

327. KREISSIG, Jon F. *Frequency of training in relation to endurance maintenance.* M.A. in Physical Education, 1969. 66 p. (G. A. Stull)
Fifty-three men trained 3 times weekly for 6 weeks on a bicycle ergometer at a cadence of 76 rpm against a resistance of 4.5 kgm. Each session consisted of 2 allout bouts separated by a 5-min. rest period. Following training, *S*s were randomly divided into 3 groups. For the next 8 weeks, one group trained once per week, the second once every other week, and the third served as a control and was tested at the conclusion of the 8-week maintenance period. All groups maintained some of the newly acquired endurance, and only the control group experienced a significant endurance decrement over the maintenance phase. Training either weekly or bi-weekly was sufficient to maintain the endurance acquisition of the preliminary training.

328. LOGAN, Mary J. *A comparison of static and dynamic equilibrium among the hearing and hearing-impaired at the elementary and college levels.* M.A. in Physical Education, 1969. 91 p. (D. H. Clarke)
Four measures of static balance and two of dynamic balance were given to hearing-impaired *S*s (N=60) at elementary and college levels, and an equal number of hearing *S*s. Significantly poorer balance ability was found in all cases for the hearing-impaired *S*s at the elementary level, but in only 3 of the 6 tests at the college level. Apparently, certain factors operate in the intervening adolescent years that permit hearing-impaired *S*s to compensate for the lack of auditory sensitivity in the performance of balancing tasks.

329. MAGALSKI, Frank M. *The effectiveness of massed and distributed practice and retention in performing a novel fine motor skill.* M.A. in Physical Education, 1969. 63 p. (B. F. Husman)
A novel penny catch test was employed to study the effectiveness of massed and distributed practice in learning and retention. Fifty-six ninth grade boys were randomly selected and assigned to one of 4 practice groups that performed the test under massed and distributed practice conditions at the same time every day for 5 weeks. A retention test was administered 4 weeks after the final day of practice. The effectiveness of learning between the groups was not significant. A significant difference existed within each group between the pre- and post- and the pre- and retention scores. Practice over a 5-week period improved performance of a fine motor skill, and after 4 weeks of nonpractice, retention was superior to pre-practice.

330. MINTER, Martin G. *A comparison of reaction time and movement time in deaf and hearing freshmen male college students.* M.A. in Physical Education, 1969. 44 p. (B. F. Husman)
Fifty deaf male freshmen at Gallaudet College, Washington, D.C., and 50 hearing male freshmen at Catholic University, Washington, D.C., who were enrolled in the required PE program, were tested on 2 tasks. The first was a simple reaction test requiring *S* to depress a telegraph key with the index finger when a visual stimulus appeared. The second was a complex reaction and movement task requiring *S* to extinguish 10 lights in random sequence. Each *S* had 10 trials on each of the 2 tests. Results of the simple reaction time test showed no significant difference. On the reaction-movement time test, however, the deaf were found superior ($P<.01$).

331. OSTROW, Andrew C. *The aggressive tendencies of male intercollegiate tennis team players.* M.A. in Physical Education, 1969. 134 p. (B. F. Husman)

Pre- and post-season aggression of 15 male active intercollegiate tennis team players, 12 male nonactive tennis team players (i.e., players who failed to make the team), and 31 male nonathlete control students was assessed by the Edwards Personal Preference Schedule (EPPS) and 6 selected Thematic Apperception Test (TAT) pictures. Measurement of aggression was restricted to a projective assessment of frequency and total TAT aggression, and an objective assessment of total EPPS aggression. There were no significant differences in the preseasonal frequency and total aggression levels between active and nonactive male intercollegiate tennis team players and nonathletes. Participation in tennis did not significantly affect the frequency and total aggression levels of the active male intercollegiate tennis team players from pre- to post-season.

332. RAGATKY, Ruth E. *The effects of progressive resistance exercises upon the pattern of muscular development as indicated by strength and girth of the elbow flexors of women college students.* M.A. in Physical Education, 1969. 65 p. (M. H. Eyler)

Volunteer college women (N=22) from beginning tennis classes were divided into 2 groups and were equated on elbow flexion strength and girth. The experimental group followed a 9-week progressive resistance exercise program. The control was not assigned to any training regimen. *S*s were measured once a week throughout the experiment on upper arm girth, dynamic strength of the elbow flexors, and static strength of the elbow flexors with the arm at a 90° angle. A significant difference was found in all tests. The use of progressive resistance exercises had a significant effect on the girth and strength of the elbow flexors of the nondominant arm.

333. SHAVER, Larry G. *Relative muscular endurance changes in ipsilateral and contralateral arms as a function of training.* Ph.D. in Physical Education, 1970. 124 p. (D. H. Clarke)

Elbow flexion endurance of 40 male *S*s was tested on right and left arms employing an ergograph loaded at 20%, 25%, 30%, and 35% of their maximum strength. Half of the *S*s then participated in a 6-week program of progressive resistance training involving elbow flexion of the right arm only, while the other half served as a control group. *S*s were retested on the ergograph for right and left arm endurance. Significant strength gains were found for the experimental group in both arms, and significant endurance gains were experienced in both arms at all treatment levels. The pattern of relative endurance was curvilinear; correlations between initial relative endurance and endurance gains of the preferred arm revealed that *S*s already approaching their maximal endurance level gained less endurance than weaker *S*s. Correlations between maximum strength and relative endurance before training were moderately high, and improved after training. No relationship was found between maximum strength gains and endurance gains, suggesting that relative loading techniques tended to compensate for individual differences in muscular strength. Strength and endurance gains found in the experimental group demonstrated the phenomenon of cross transfer.

334. SYSLER, Barry L. *Muscular endurance retention as a function of length of detraining.* M.A. in Physical Education, 1969. 83 p. (G. A. Stull)

College men (N=53) exercised on an arm-lever ergometer 3 times per week during a 7-week training period. Each training session consisted of one allout bout of right elbow flexion against a 9.60-lb. resistance at a cadence of 40 repetitions per min. Upon completion of the training period, *S*s were randomly divided into 3 groups and ceased training for 1, 3, or 5 weeks. Results of retention tests administered at the conclusion of the various inactivity periods revealed that no appreciable amount of muscular endurance was lost as a result of the one-week inactivity period, but detraining for at least 3 weeks caused a significant decrement.

335. WEBER, Carol. *A survey of drug use at West Chester State College.* M.A. in Health Education, 1970. 131 p. (H. L. Jones)

Seventy-four percent (N=484) of a selected sample of 653 students returned anonymous questionnaires. It was found that drug use was greater among males; did not vary significantly among academic years; and varied widely among academic majors. The greatest use was among arts and science majors and the least among music majors. Eighteen percent of the sample had used drugs for nonmedical reasons. Marijuana was the drug most widely used (13%), followed by amphetamines (8%). Initial use for both of these drugs was primarily during the college years. Although drug users did not differ dramatically from nonusers, users lived in apartments rather than at home, were slightly poorer academically, and indicated "none," "Jewish," or "other" rather than "Catholic" or "Protestant" as a religious preference. Drug use was inversely related to how religious they considered themselves. Both users and nonusers, however, came from "close-knit" or "about average" homes, had someone to talk to about important personal problems, enjoyed school, did not think that drugs should be legalized, and did not plan future drug use.

336. WHITCOMB, Barry M. *A cinematographical analysis of the clean and jerk lift used in Olympic weightlifting.* M.A. in Physical Education, 1969. 204 p. (D. L. Kelley)

Five amateur athletes proficient in the 3 Olympic weightlifting events were filmed biaxially while performing the clean and jerk lift. From the final film product, general and specific analyses were conducted by observing predetermined frames characterizing the 13 positions analyzed. The primary factors selected for measurement were: joint angles, barbell and lifter velocities, foot and hand positioning, barbell paths, the height to which the barbell was lifted during the clean portion of the lift, other selected distances relevant to the specific analysis of the lift, and the determination of the relative variability in performance among each lifter's trials. The data revealed that there existed numerous similar, general movement patterns common to the lifters analyzed. When these performances were subjected to a specific analysis, marked differences were apparent in terms of the criteria selected for analysis. The data suggest that numerous revisions in authoritative descriptions are necessary if mechanically sound body positions are to be described for lifter, coach, and official.

337. WILLIAMS, Lois A. *Specificity versus generality of motor response consistency.* M.A. in Physical Education, 1969. 69 p. (R. A. Schmidt)
Four performance tasks involving rapid limb movements were administered to 46 SHS girls. Response consistency during 54 of 60 trials was measured as the standard deviation of the *S*'s scores about her own mean. Response consistency appeared to be highly task specific with intercorrelations of tasks ranging from r=.01 to .25. Intertask mean performance correlations (r=.70 to .89) indicated that a considerable degree of generality existed between arms and legs. The mean arm and leg correlations revealed only a moderate degree of generality. The S^2intra was highly specific to the task and limb involved. The trend of the S^2intra scores showed an increase in reliability with an increase in the number of trials.

338. WOLFE, Kurt F., Jr. *Activation as a factor in warm-up decrement.* M.A. in Physical Education, 1969. 75 p. (R. A. Schmidt)
Thirty-eight *S*s performed 70 trials on a discrete motor task involving speed of limb movement. Five-min. rest periods were interpolated between Trials 30–31, 40–41, 50–51, and 60–61. Just prior to each post-rest performance *S* received 0, 15, 30, or 60 sec. (in a balanced order) of squeezing a hand dynamometer with the left hand at ½ maximum tension. Initial performance increased rapidly for about 20 trials, where the slope appeared to start leveling off. Warm-up decrement was evident on Trials 31, 41, and 51, but little warm-up was exhibited on Trial 61. Although the 60-sec. treatment means were generally lower than the other 3 treatment means, all the between-treatment *F*'s were nonsignificant, indicating that activation was not a factor in warm-up decrement.

339. YOUNG, Judith C. *A comparison of motor performance by preschool children from middle and lower economic groups.* M.A. in Physical Education, 1969. 88 p. (G. A. Stull)
Fifty-six middle-class and 56 lower-class 5- and 6-year-old children were tested for height, weight, and performance in 6 motor skills. The sexes were equally represented in the two economic classes. Results indicated no significant differences between classes or sexes in body weight, shuttle run, balance beam, or broad jump. In addition, no interaction of these variables was observed. However, middle-class *S*s were significantly taller than the lower class. Significant differences favoring lower class and boys were indicated for both throwing accuracy and distance. Also, middle-class boys scored better on the distance throw than girls of either class. Lastly, middle-class girls and lower-class boys were faster than middle-class boys in running a 30-yd. dash.

University of Massachusetts, Amherst, Massachusetts
(H. K. Campney)

340. APGAR, John L. *The effect of body fat on the forty-yard shuttle run.* M.S. in Physical Education, 1969. 61 p. (H. K. Campney)
Thirty *S*s were selected by observation to fit into one of 3 body fat groups: 0–15%, 16–25%, and 26% and above. The Behnke method for calculation of body fat was used to assign these *S*s to a group. ANOVA for repeated

measures was used to measure the internal consistency of the 5 percentages of body fat. The 40-yd. shuttle was administered to each S 10 times. ANOVA for repeated measures was used to measure the internal consistency of the trials. A one-way ANOVA indicated a significant effect of body fat upon performance of the 40-yd. shuttle run. The Newman-Keuls Multiple Comparison Test identified the only significant difference between the 0-15% group and the 26% and above group.

341. CIEPLIK, Raymond. *Physical work and amusements as concerns of the Young Men's Christian Association, 1851-1884.* M.S. in Physical Education, 1969. 88 p. (G.M. Lewis)

Physical work and amusements evolved as important considerations of the YMCA during the first 3 decades of its existence. The concern of YMCA leaders with such physical activities as gymnasium drills and heavy apparatus work and amusements such as bowling and chess were twofold. A primary consideration was the development of the "whole man," but in addition there was a desire to attract young men in order to reach them spiritually. Efforts utilizing purely religious motivations, which the YMCA had been founded upon, had failed to meet the expectations of Association leaders. It was evident to those leaders that secular activities were necessary to reach the "common man," or middle-class worker, and as a result physical work and amusements were introduced. Because of the public attitude toward sport in general, however, the recreational activities were not always looked upon with favor. But it was apparent in reports from individual associations, debates at YMCA conventions, and statistics and reports in other Association literature that the activities had attained much success.

342. DORMAN, Jacquelyne L. *Creativity as a significant concept in sport, dance, and physical activity.* M.S. in Physical Education, 1968. 68 p. (H. VanderZwaag)

Examination was accomplished through the philosophical method of conceptual analysis. In order to understand creativity in dance, sport, and physical activity it was necessary to explore creativity in general, and creativity in art, in literature, and in psychology. This examination led to the discovery of certain basic factors underlying the creative process. To help in understanding the creative process in dance, sport, and physical activity, these basic factors were applied to physical activity to determine if it incorporated them. Finally, 5 representative activities were explored to see how they involved the creative process. These activities were dance, golf, field hockey, gymnastics, and children's play.

343. GIVONE, Robert. *The personality of basketball players from rural and urban areas as measured by the Cattell sixteen personality factor questionnaire.* M.S. in Physical Education, 1969. 101 p. (P. Berlin)

The urban sample was comprised of 16 basketball players from Lehman College in New York City, while 16 players from Wayne State College, Nebraska, represented the rural sample. The criterion by which Ss were selected was size of home town population. None of the rural Ss came from a town of over 5,000 inhabitants; none of the urban athletes came from a city with less than one million people. The 16PF data were first analyzed by a hierarchical grouping technique, but no mutually exclusive

rural or urban groups were found. The urban Ss were significantly more outgoing, emotionally mature, venturesome, shrewd, and confident, according to *t* test analysis. Differences greater than 2-to-1 were found on the biographical questionnaire items relating to residence, SHS enrollment, SHS sports participation, SHS intramural participation, college extracurricular activities participation, religion, athletic scholarships, and degree aspirations.

344. KILEY, Robert P. *Energy cost and a passive exercise device.* M.S. in Physical Education, 1969. 36 p. (H. K. Campney)

Seven Ss were given 4 trials to gain an estimate of their resting metabolic rates. Four trials were conducted to yield an estimate of S's passive exercise metabolic rates. Electrical stimulation was employed as the mode of passive exercise. The electrical stimuli were of a magnitude of .85 milliamperes at 1.40 volts. The differences between the resting metabolic rates and the passive exercise metabolic rates were significant ($P < .01$).

345. LINDER, Marian J. *Performance of the fencing lunge under varied conditions of visual focus.* M.S. in Physical Education, 1969. 122 p. (P. Berlin)

Two groups were involved: a "visual emphasis" group (N=9) practiced in the dark against luminous electrical wall targets for 5 min. each session; a "conventional" group (N=8) practiced against the same targets under standard conditions of light. Skills included in the study were the thrust, lunge, advance-lunge, and retreat-lunge. Assessments of S's performances were recorded weekly for 6 weeks. Subjective reactions of Ss to their experience were solicited by means of a questionnaire. No differences in performances between degrees of complexity of footwork were found. According to the questionnaire, "visual emphasis" Ss generally agreed that the experience was unpleasant. A descriptive analysis of the data suggested that: the dependence on peripheral cues was more crucial for men than for women, especially during the addition of more complex footwork; autistic factors, transfer effects, the relationship of attention to reinforcement, and vice versa might account for some of the findings; and individual differences had a marked effect on the outcome of the study.

346. MAWDSLEY, Harry P. *A kinematic and kinetic analysis of the technique of heading in soccer.* M.S. in Physical Education, 1969. 77 p. (S. C. Plagenhoef)

Film of an accomplished professional soccer player was analyzed and a comparison made between 2 techniques of heading a soccer ball. The technique used on the rising stage of a jump was compared to the technique used at the top of a jump. Flight path of the whole body center of gravity in both jumps was determined by using a computer program, and from these results the hip joint was chosen as the fixed point from which the analysis was made. Results indicated the dominant role played by the trunk in both techniques and the importance of the hip flexors, particularly on the rising stage of the jump. Trunk extension was a feature of the technique used at the top of the jump and the importance of the trunk flexors in this technique was established. Timing was a vital factor in both techniques and the importance of keeping the eyes on the ball throughout the movement was emphasized.

347. MICHAELS, Richard L. *Design of an apparatus to measure resistance to a human body being towed through water at constant velocity.* M.S. in Physical Education, 1969. 37 p. (B. Ricci)

Three males were chosen as Ss on the basis of varying body surface area and were towed the length of a 75-ft. pool by means of a towing apparatus. The power was supplied by an electric drill press. Ss all assumed the same streamlined body position while being towed. The water resistance to the human frame was measured and recorded by means of a strain gauge and a read-out device. Twenty repeated trials were run on the Ss for 3 successive days. A repeated measures two-way ANOVA was conducted in order to determine if the apparatus yielded reliable data. The results yielded a nonsignificant *F* for interaction between days and subjects; *F* ratios between subjects and between days were significant.

348. PEPPARD, Alan P. *Status of programs for the care and prevention of athletic injuries in schools within a geographic region of the New York State Public High School Athletic Association.* M.S. in Physical Education, 1969. 102 p. (D. C. Bischoff)

Questionnaires were sent to 107 athletic directors and 200 general practitioners within the area of Section III. The author interviewed Dr. Ralph S. Emerson, chairman of the N.Y.S. Medical Society's Committee on Medical Aspects of Sports, and Mr. Robert Carr, supervisor of athletics for the N.Y.S. Department of Education. Questionnaires were returned by 69 (64.5%) of the athletic directors and 69 (34.5%) of the physicians. Approximately 85% of the coaches used preventive taping. A majority of the physicians were not actively involved with prevention. Certain coaches were evaluating instead of identifying injuries. Some athletes did not receive physical therapy treatment for specific injuries. Certain schools are providing physical therapy treatment. One-third of the physicians reported the school districts employed a team physician. Approximately one-quarter of the physicians do not use a means of specific rehabilitation. A large majority of the schools carry insurance on athletes.

349. PLUMMER, Peter J. *A Q-sort study of the achievement motivation of selected athletes.* M.S. in Physical Education, 1969. 101 p. (P. Berlin)

A set of 60 statements representing degrees of achievement motivation were used in conjunction with an 11-point scale. College athletes who participated in gymnastics (N=30) and baseball (N=34) were studied. A mean Achievement Motivation Score of 39.71 was obtained for the baseball players and a mean score of 39.74 for the gymnasts. A nonsignificant *t*-ratio of .37 was obtained. In treating the data pertaining to the statements, a Spearman's coefficient of rank correlation rho value of .88 was computed between statement responses of the 2 groups, indicating a close relationship.

350. REDMOND, Gerald. *The Caledonian Games in nineteenth century America.* M.S. in Physical Education, 1969. 133 p. (G. M. Lewis)

In the nineteenth century, from at least as early as 1853, Caledonian Games were promoted annually by Scottish immigrants' associations in the United States. Professional running, jumping, and throwing events were featured. These Games became a national institution, attracting huge crowds in large cities, and events were made open to all. Amateur

track and field began with the New York Athletic Club in 1868. The rise of similar clubs led to the formation of the NAAAA in 1879 and the AAU in 1888. Both controlled amateur track and field. By 1888, the Caledonian Games were in decline, but their contribution to the new sport had been a significant one. Events such as the hammer-throw, hop, step, and jump, and shot-put were among those pioneered by Caledonian athletes. Later, they competed at amateur clubs' meetings, and vice versa. A Caledonian athlete won the first American intercollegiate track event. Another, termed "the father of the pole-vault," became first director of athletics at the New York Athletic Club.

351. ZINGALE, Donald P. *The Amherst College Athletic Board prior to 1905.* M.S. in Physical Education, 1969. (M. Coffey)

Various sports and games were in evidence at Amherst College as early as 1821, the year in which the college was founded. At that time the boys organized, financed, and administered their own athletic affairs. During the middle decades of the century intercollegiate athletic competition was introduced, while in the latter decades there was a tremendous increase in the growth and development of athletics at Amherst College. As intercollegiate competition intensified and leagues and championships grew in size and number, the problems and duties of athletic administration eventually proved too much of a task for student management. In 1890, administration of athletics at Amherst College was handed over to an athletic board composed of students, faculty, and alumni. The board's purpose was to unify all of Amherst's athletic associations under one regulatory athletic body, control the college's athletic finances, and advise in matters of intercollegiate athletic policy.

McNeese State College, Lake Charles, Louisiana (H. Leis)

352. FORTIER, Frank J., III. *A cinematographical and mechanical analysis of the forward handspring, the backward handspring, and the forward somersault.* M.S. Ed. in Physical Education, 1969. 138 p. (B. L. Ruhl)

The cinematographic method was used to analyze selected factors involved in the performance of each skill. Primary factors investigated were: initial velocity, average angular velocity, body angle at take-off, distance of flight, time of flight, and path of the center of gravity. A mechanical analysis was given for each skill, and specific techniques employed that led to an effective performance were elaborated upon.

University of Michigan, Ann Arbor, Michigan (G. G. Reiff)

353. ALBINSON, J. G. *Life styles of physically active and physically inactive college males.* Ph.D. in Education (Physical Education), 1969. 125 p. (J. A. Faulkner, G. Guerin)

354. BARCLAY, Jack Kenneth. *The metabolism of contracting dog skeletal muscle in situ.* Ph.D. in Education (Physical Education), 1969. 113 p. (J. A. Faulkner)

355. BAUERLE, William S. *The impact of a professional advisor on upgrading the physical education program in a six-school satellite in the City of Detroit.* Specialist in Education (Physical Education), 1969. 74 p. (S. Galetti)

356. BRODERICK, Robert J. *A speed, endurance, accuracy (S.E.A.) test for assessing the basketball playing performance levels of high school boys.* Specialist in Education (Physical Education), 1968. 77 p. (N. Lehsten)

357. CHARTIER, Barbara C. *The role of physical education in the life of the physically disabled child.* Specialist in Education (Physical Education), 1969. 49 p. (G. G. Reiff)

358. DE MILLION, John L. *A study of physical fitness of junior high school boys and their subsequent participation in interscholastic athletics.* Specialist in Education (Physical Education), 1969. 84 p. (N. Lehsten)

359. GUY, James. *A comparison of existing programs of physical education in school districts with enrollments of 1,500 or less students in the State of Idaho.* Specialist in Education (Physical Education), 1969. 104 p. (G. G. Reiff)

360. HANEY, Robert L. *A personality analysis of selected eleventh grade athletes and nonparticipants in athletics.* Specialist in Education (Physical Education), 1969. 77 p. (S. Galetti)

361. HERZOG, Robert. *A comparison of the status of physical education programs carried out by specialists and nonspecialists in Iowa.* Specialist in Education (Physical Education), 1969. 62 p. (S. Cooper)

362. HOLMAN, Richard T. *A physical fitness study of participants in high school interscholastic winter sports.* Specialist in Education (Physical Education), 1969. 63 p. (S. Galetti)

363. JANKOWSKI, Louis W. *A study of the relationship of caloric intakes and voluntary energy expenditures to body fatness in fourteen sedentary college men.* Ph.D. in Education (Physical Education), 1969. 104 p. (M. Foss)

364. KIDDER, Worden M. *Attendance patterns at selected professional meetings of members of the Midwest District of the AAHPER.* Specialist in Education (Physical Education), 1968. 72 p. (N. Lehsten)

365. KLASSEN, Richard P. *The relationship of the flexed arm hang and pull-ups for girls using regular and reverse hand grips.* Specialist in Education (Physical Education), 1969. 81 p. (G. G. Reiff)

366. KNEER, Marian E. *Relationship of teacher and student perception of student goals during the teaching of a selected physical education activity unit.* Specialist in Education (Physical Education), 1969. 76 p. (S. Cooper)

367. LAWSON, Hal A. *The evolution of elective programs of physical education in American universities.* Ph.D. in Education (Physical Education), 1969. 258 p. (P. A. Hunsicker)

368. MAXEY, Herman O. *Concept tests for assessing sixth grade students' ability to impart varying degrees of force and to absorb force.* Specialist in Education (Physical Education), 1969. 63 p. (S. Cooper)

369. MORLEY, Robert R. *A comparison of gross motor performance of second grade boys who have experienced reading success with gross motor performance of boys who have failed in reading.* Specialist in Education (Physical Education), 1969. 54 p. (N. Lehsten)

370. NIEMAN, Ronald J. *The college academic potential of the 1967 and 1968 United Press National Wisconsin all-state football selections.* Specialist in Education (Physical Education), 1969. 57 p. (S. Galetti)

371. SULLIVAN, John J. *The effects of the financial resources of K-8 school districts of Lake County, Illinois, upon their programs of physical education.* Specialist in Education (Physical Education), 1969. 63 p. (N. Lehsten)

372. THORNTON, Jerry B. *A comparison of gross motor achievement of first graders: Predicted reading success with predicted reading failures.* Specialist in Education (Physical Education), 1969. 71 p. (S. Galetti)

373. WARRINGTON, Joan E. *The effect of modular scheduling on girls' physical education programs in selected high schools in Southern Michigan.* Specialist in Education (Physical Education), 1969. 69 p. (N. Lehsten)

Michigan State University, East Lansing, Michigan

374. CRAPO, Douglas M. *Recreation area "day-use" investigation techniques: A study of survey methodology within Michigan state parks.* M.S. in Resource Development, 1969. 146 p. (J. Stein)

Although "day-users" constitute the major load on U.S. and Canadian park systems, little investigation of the extent and nature of day-use has taken place, because of the measurement problems involved. This study developed an acceptable day-use investigation technique through the testing of a series of self-administered questionnaires. Variables such as questionnaire length, style of question, questionnaire color, and retrieval methods were tested to discover which techniques produce the highest means of comparisons with data obtained by supervised response to the same questionnaire. Recommendations are given for implementation of a self-administered questionnaire day-use data gathering system.

375. KOENIG, Frances Becker. *Comparative analysis of selected personal and social background characteristics of high school girls at three levels of participation in basketball.* Ph.D. in Physical Education, 1969. 104 p. (J. A. Wessel)

Participants and nonparticipants in SHS girls' basketball were described and compared on selected characteristics. Cattell's Jr.-Sr. High School Personality Questionnaire, Bill's Index of Adjustment and Values, Haskins and Hartman's Action-Choice Test, and several semantic differential scales were administered to 29 varsity team members, 34 intramural players, and 30 nonparticipants from 2 schools in the Flint, Michigan, area. Data were analyzed with nonparametric statistical procedures including the median test, extension of the median test, Kruskal-Wallis analysis of variance, and Mann-Whitney U test. Findings indicated that differences exist between athletes and nonathletes on three personality dimensions: sociability, group orientation, and emotional control. Participants had higher self-concepts than did nonparticipants. No differences were found among the 3 groups in sportsmanship or degree of femininity.

University of Minnesota, Minneapolis, Minnesota

(J. F. Alexander and M. U. Wilson)

376. ANDERSON, Bruce D. *The influence of model performances and feedback on the learning of a complex motor skill.* Ph.D. in Education, 1968. 101 p. (R. J. Donnelly)

The influence of model performances and various levels of feedback was explored in the acquisition of a complex athletic skill, the short golf swing. Sixty Ss were randomly assigned to 5 treatment groups in which they received 5 hours of instruction and practice. A factorial design was employed to assess the effects of providing a filmed model performance and 3 kinds of feedback (kinesthetic, kinesthetic plus knowledge of results, and kinesthetic plus knowledge of results plus corrective comments). At the conclusion of the experiment, Ss were given a performance test and were rated by an experienced instructor. No evidence was found to indicate that model performances facilitated learning. However, each of the 3 kinds of feedback produced significant gains and feedback which included corrective comments produced significantly more learning than the other 2.

377. APPLETON, Elizabeth A. *A study of experimentation in two different methods of teaching modern dance composition.* M.A. (A) in Physical Education, 1968. 84 p. (M. U. Wilson)

The part method consisted of exploring one element of dance composition at a time. The cumulative method consisted of exploring each element of dance composition in turn, then incorporating it with all of the elements learned previously. Two groups of SHS juniors were instructed in modern dance composition, using each of these methods, for 3 40-min. periods per week for 10 weeks. They were tested at the beginning and the end of this period by having them compose short dance composition studies which were rated on a basis of uniform criteria by 3 professionally qualified judges and also by a knowledge test. The judges' ratings of the final

composition studies, and the results of the knowledge test showed small consistent — though not statistically significant — differences in favor of the cumulative method.

378. DE SCHRIVER, Richard L. *The effect of noise upon the instrumental performance of exercised and nonexercised rats.* Ph.D., 1969. 298 p. (R. E. McAdam)

The effect of different combinations of forced swimming and/or noise upon the latency of the initial bar-touch and upon the bar-touching rate of rats who were exposed to noise during testing was investigated. Sixty 75-day-old male Sprague-Dawley rats were randomly assigned to a control group and 4 treatment groups: 6 wks. swimming, 6 wks. swimming and noise, 3 wks. swimming and noise, and 3 wks. noise. The swimming treatment consisted of varying lengths of exercise with a 6 gr. weight attached to the tail; the noise treatment was a 90 db. intermittent white noise signal. A pre-treatment, 5-min. Skinner box test was administered. Two similar post-treatment tests, spaced 24 hours apart, were run under the condition of a 100 db. intermittent white noise signal. The time of the initial bar-touch and the number of bar-touches for each 1-min. interval and the total 5-min. test were recorded. Between-group differences for the various pre- and post-treatment latency and rate measures were statistically nonsignificant. The post-treatment means of the rate measures tended to favor the treatment groups over the control group. Within-group comparisons were generally statistically significant.

379. SHICK, Jacqueline M. *The effects of mental practice of selected volleyball skills for college women at the University of Minnesota.* Ph.D. in Education, 1968. 133 p. (E. M. Jaeger).

The effects of mental practice on improvement in serving and volleying skills as measured by the French and Cooper serving and wall volley tests, utilizing modifications suggested by Bassett, Glassow, and Locke, were analyzed. The first study (N=10) compared mental practice (3 min. daily for each skill for 2 weeks) with no practice. The other studies compared 3 min. and 1 min. of daily mental practice on each skill in addition to equal time for physical practice. The duration of the experimental periods was 5 weeks (68 Ss) and 3 weeks (38 Ss). In conjunction with the last study, a questionnaire was administered concerning the mental practice periods, and electromyographic records were obtained from 19 Ss to investigate intrinsic muscular movement. No statistically significant results were obtained for the volleying skill; however, the first 2 studies yielded significant results for the serving skill. Varying amounts of muscular involvement were evidenced in the electromyograms. No one single variable, of those considered in this investigation, could be said to be the key factor in determining a given S's improvement score.

380. WEINGARTEN, Gilad. *Effect of physical exertion on mental performance and cardiorespiratory responses in college males of different physical fitness levels.* M.A. in Physical Education, 1969. 100 p. (J. F. Alexander)

University of Minnesota male students were, on the basis of times in the 600 yds. run and maximal oxygen intake values, assigned to either a "fit" ($M\dot{V}O_2 > 51.0$ cc/kg/min) or a "less fit" group. Two mental tests were

administered. In test -1, the 30 odd-numbered matrices from the Standard Progressive Matrices (1958) were consecutively screened in front of S while performing physiologically a "moderate" work level on a treadmill. Test -2, consisting of the 30 even-numbered matrices, was administered a week later while Ss continuously performed a physiologically "unduly heavy" work level on the treadmill. Cardiorespiratory responses during test -2 were estimated by means of a continuous treadmill walk in which Ss replicated their test -2 walk. These indicated that the standard work load performed prior to answering test -2 exerted the "less fit" to a significantly greater extent than the "fit" group. Between-group differences on scores and time taken for completion were insignificant in test -1 but significant in test -2, the "fit" group scoring higher and taking the longer time. The "fit" scored the same on both mental tests, taking more time for test -2 completion, whereas the "less fit" score dropped significantly in test -2, taking less time for its completion.

381. YOUNG, Mary L. *The relationship between personal-social adjustment, physical fitness, and attitude toward physical education among high school girls within varying socioeconomic levels.* Ph.D. in Education, 1969. 113 p. (E.M. Jaeger)

JHS girls (N=114) were given fitness, personality, and attitude tests. There were no differences between socioeconomic groups with reference to physical fitness or attitude toward PE. There was a difference between personal adjustment and social adjustment with respect to socioeconomic groupings. There was a high positive relationship between physical fitness and attitude and between physical fitness and personal adjustment for the entire population. However, physical fitness and social adjustment were not related. High positive correlations existed between personal adjustment and attitude, social adjustment and attitude, and personal-social adjustment and attitude within the middle group. Within the low socioeconomic group, an inverse correlation between social adjustment and attitude was found.

University of Missouri, Columbia, Missouri (B. B. Godfrey)

382. ARNETT, Chappelle. *Perceptual-motor and motor performance test items for preschool through grade six children.* Ed.D. in Physical Education, 1969. 210 p. (B. B. Godfrey)

This investigation was a pilot study for the purpose of selecting test items to assess the components of perceptual-motor and motor performance in children. The components were identified as balance, rhythm and coordination, movement patterns, strength, and perceptual-motor match. The test items were selected as measures of each component according to content validity, suitability, ease of administration and scoring, and as being comprehensible to the child. Correlational and ANOVA techniques were employed in selection of test items. A preliminary profile of test items was developed for each of the following groups: prekindergarten and kindergarten; grades 1 and 2; grades 3 and 4; and grades 5 and 6.

383. BALLINGER, James Loren. *Development and evaluation of an innovative instructional program in the foundation areas of physical education for university freshman men.* Ed.D. in Physical Education, 1969. 129 p. (B. B. Godfrey)

A descriptive case study approach was used to develop and evaluate an innovative instructional program in the foundation areas of PE for university men utilizing large group instructional techniques under conditions of seriously limited instructional space. The relative effectiveness of instructional television was compared to traditional face-to-face instruction. From achievement test scores, it was concluded that instructional television and traditional face-to-face instruction were equally effective in the PE foundation areas. From student, instructional faculty, television tape "talent," and total staff separate specific evaluations it was concluded that the procedures described were effective and by following them a PE department could successfully develop an innovative program as identified.

384. BERG, James Otto. *Differences between male participants and nonparticipants in a college intramural sports program in regard to academic achievement and academic ability.* Ed.D. in Physical Education, 1969. 352 p. (B. B. Godfrey)

Comparisons were made statistically (ANOVA, covariance, *t*-tests, *r*) in regard to academic achievement and academic ability among 6 sample groups (4 by individuals, 2 by residence hall) drawn from 1,108 freshman university males in 3 men's residence halls according to extent of participation in intramural sports. Significant ($P < .05$) differences were found in favor of participants over nonparticipants as possessing higher academic ability and achievement, and in favor of high over low academic ability and achievement as tending to participate in intramural sports. With academic ability held constant, no significant differences were found among high, average, or low frequency participants.

385. BRYANT, James E. *A descriptive case study analysis of the basketball jump shot and the effect of fatigue on the jump shot.* Ed.D. in Physical Education, 1969. 352 p. (B. B. Godfrey)

Five University of Missouri varsity basketball players were filmed (16 mm, 64 f.p.s., 3 synchronous views, lower, upper, and full body) for a mechanical and cinematographic analysis through a descriptive case study approach of the motor skill of the basketball jump shot and the effect of fatigue on the jump shot. Ss performed 3 sets of 10 shots from 20 ft. in front of the basket, the first following minimal exertion and the second and third after 30 min. controlled basketball scrimmages, with a 109-ft. sprint preceding each jump shot. A composite of the jump shot was developed representing ranges of selected body measurements and application of mechanical principles and laws. Jump shot performance and effect of fatigue were found to be individualized. Six body measurements were found to be affected by fatigue between sets and 4 within sets. The variation of the jump shot did not reveal the mechanical reason for long-range shooting skill on the basis of playing background. Superior shooters used a continuous style and the long levered player may have an advantage from 20 ft. in front of the basket.

386. CLAWSON, Sam D. *Comparison of perceptual-motor and motor performance levels of higher and lower educable mentally retarded children.* Ed.D. in Physical Education, 1969. 125 p. (B. B. Godfrey)

The Missouri Perceptual-Motor Performance Test Items, preliminary form, were applied to a random sample (N= 30) of Missouri school districts with special classes for EMR children (N=1,020) to yield a profile, acceptable with limited confidence. of performance by age level (8, 9, 10, 11). Differences were examined between lower (IQ 48-60) and higher (IQ 66-78) educable mentally retarded children. Higher IQ (EMR range) children performed better than lower; IQ was highly correlated with success on the Missouri P-M Performance Items. All test items were found to be simple to administer and comprehensible to the children as evidenced by administrator, teacher, and student reaction.

387. HAIRABEDIAN, Thomas M. *Selected factors affecting the success of the forward three and one-half and backward two and one-half somersault dives.* Ed.D. in Physical Education, 1969. 84 p. (B. B. Godfrey)

Ten divers of national competition caliber were filmed at 64 f.p.s., 16 mm camera, and analyzed on a Recordak film reader, Model MPE 1, to identify the relationship of board depression, elevation, horizontal distance, head position, and angular velocity to success of the dive. For the 2 dives used essential findings suggest that head position does not have an identifiable effect on angular velocity in the forward three-and-one-half but does in the backward two-and-one-half. The diver who maintains horizontal head facing on board depression and take-off attains greater elevation and maintains control of the forward three-and-one-half. The deeper the crouch of the diver the greater the board depression and higher elevation, the greater the elevation the greater the success in both dives regardless of angular velocity. The diver with head back position has less success than one with head straight in the back two-and-one-half.

388. LANDWER, Gerald E. *Circulorespiratory adaptations of low fitness males to three specific training programs on the bicycle ergometer.* Ed.D., 1969. (B. B. Godfrey)

Male Ss were identified as possessing low fitness as a result of a 600-yd. run and a physical working capacity test. Random assignment placed them in 3 groups, each of which underwent a bicycle ergometer training program for 8 weeks. The training programs differed in intensity with one group training at a maximum work load, one training at two-thirds maximum, and one training at one-third maximum. Cardiovascular fitness measures consisting of physical working capacity, predicted oxygen consumption, and resting heart rate were administered on the eighth, sixteenth, and twenty-fourth exercise periods. Results indicated that the most efficient method for improving the cardiovascular fitness of low fitness individuals is to employ submaximal work loads during the initial stages of training with gradual increases in intensity as their state of training warrants. High intensity training appears to surpass the capacity of Ss of low fitness to respond effectively.

389. LUBBS, Russel Dean. *The effects of water ingestion on central core temperature during exercise in low ambient conditions.* M.A. in Physical Education, 1969. 41 p. (J. A. Roberts)

Ten male volunteer Ss exercised on a motor driven treadmill in low ambient conditions. Comparisons between central core temperatures following the experimental treatment ingestion of one liter of tap water prior to exercise, and temperatures following the control treatment, no water consumption prior to exercise, were made. Temperatures were measured with a rectal probe and thermistor thermometer during and after exercise. The difference between treatments in temperature elevations during exercise was found to be significant ($P < .01$); the difference between treatments in temperature declinations during recovery was found to be non-significant.

390. MARKEL, Marilyn R. *The relationship of selected measures of competence in physical education basic instruction program for women at the University of Missouri-Columbia.* Ed.D. in Physical Education, 1969. 155 p. (B. B. Godfrey)

The measures of competence selected were the 3-item Scott Motor Ability battery and 2 original instruments, a background data sheet of PE activities and a written knowledge test battery. Both original instruments attempted to measure a breadth of knowledge and experience in a variety of PE activities. The criterion measure was grade points accumulated in PE in the freshman year. Relationships existing between grade points accumulated in PE and score on the background data sheet in PE activities and the Scott Motor Ability battery were not significant. Significance was obtained for the written knowledge test battery.

391. MEYER, Larry E. *A comparison of effects of various types of activity on physiological variables in sedentary men.* Ed.D. in Physical Education, 1969. 154 p. (B. B. Godfrey)

Adult males (N=52), described as sedentary, participated for a period of 8 weeks in prescribed exercise programs of either running, swimming, calisthenics, or sports activity, while a group of control Ss continued to follow their normal routines. Ss were pretested and post-tested on parameters of cardiovascular fitness, lean body mass, and serum cholesterol content of the blood. A statistically significant difference was found between the increase in cardiovascular fitness of the running group and all other groups. No significant differences were found when mean differences between pretest and post-test scores of the 5 groups were compared for the variables of lean body mass or serum cholesterol content of blood.

392. WILLIAMS, Roger Louis. *The effect of mental practice and arousal on a tracking task.* Ed.D. in Physical Education, 1969. 90 p. (B. B. Godfrey)

This study was designed primarily to determine if the mental practice process could be interpreted in favor of a learning hypothesis not attributable to differential arousal (motivational) variables induced by experimenter bias, and secondarily to determine if significant differences in arousal (motivation) were produced between treatment groups. A physiological measure (electromyogram) was used to determine 3 levels of arousal: high, middle, and low. A placebo group as well as physical

practice, mental practice, and strict control groups were used with a tracking task. Analysis of treatment effects indicated that mental practice and physical practice groups were significantly better than either control group, but differences between mental and physical practice groups were not significant. The mental practice group differed significantly from both control groups in the high and low arousal classifications.

New York University, New York, New York (R. A. Weiss)

393. AUGUST, Irwin. *A study of the effect of a physical education program on reading readiness, visual perception and perceptual-motor development in kindergarten children.* Ed.D., 1969. 114 p. (R. C. Brown, Jr.)

The purpose of this investigation was to determine the effects of a PE program emphasizing laterality and directionality skills on reading readiness, visual perception, and perceptual-motor development on an experimental group of kindergarten children. A control group, randomly chosen from the same population, received a conventional PE program of similar duration and lesson quantity. The pretraining status of all Ss was determined for reading readiness, visual perception, perceptual-motor development, intelligence, age, sex, height, and weight. Pre-to-post score differences were tested by ANOVA. Also, the correlations between changes in scores of perceptual-motor development, visual perception, and reading readiness were computed. Significant gains were recorded for the experimental Ss in visual perception and perceptual-motor development, but not in reading readiness.

394. SCHAINE, Robert. *A study of the historical development of the resort industry in the Catskills of New York State in order to determine the changing patterns of leisure pursuits of the guests.* Ph.D., 1969. (M. Gabrielsen)

395. TENNEY, Ashton Munroe. *A study of cardiovascular adaptation to exercise in schizophrenics.* Ph.D.,i1969. 66 p. (R. A. Weiss)

The object of this study was to determine if hospitalized, white, male schizophrenics, compared with normal controls, were physically deconditioned before training, and if their response to physical training is equivalent. Experimental Ss (N=24) and 24 controls were tested before and after a 6-week course of physical training through treadmill running. The Billings revision of the Balke Progressive Treadmill Exercise Tolerance Test, utilizing heart rate to indicate cardiovascular response and adaptation to exercise, was employed. The physical condition of the schizophrenic group was found to be lower than that of the control group, both before and after the course of physical training. Schizophrenics improved their physical condition significantly through physical training. Equating their pretraining performance with that of the control group by a statistical analysis of covariance failed to nullify the difference in reponse to physical training favoring the controls.

University of North Carolina at Greensboro, Greensboro, North Carolina (G. M. Hennis)

396. ANTLE, Susan J. *A comparison of attitudes of seventh and tenth grade girls toward the moral-spiritual, psychological, sociological, and general values in physical education.* M.Ed., 1969 79 p. (G. M. Hennis)

The Mercer Attitude Inventory is a reliable instrument for measuring attitudes of JHS girls toward the measured values in PE. There were no significant differences between the seventh and selected tenth graders (who had previously attended the same JHS as the seventh graders), nor between the selected tenth graders and the other tenth graders. Ss had favorable attitudes toward their PE experience. The activities in the program were a factor in determining their liking and disliking PE.

397. BINGHAM, Raymond C. *The effectiveness of four methods of practice in basketball foul shooting for junior high school boys.* M.Ed., 1969. 66 p. (G. M. Hennis)

Ss were 32 ninth grade boys. By means of the Knox Basketball Skill Test, the class was ability-grouped into 4 teams of 8 members each. The study was divided into 3 phases: the first consisted of 6 games with no foul shooting practice before games; the second consisted of 9 games with each group utilizing its assigned practice method for 15 min. prior to games; and the third phase, as in the first, consisted of 6 games with no free throw practice before games. Practice consisted of 2 different physical practice methods and a mental practice method. The first physical practice group shot a total of 20 free throws daily during practice sessions. The second physical practice group attempted to make 2 consecutive free throws at 2 different baskets. The mental practice group watched demonstration and loop films, read instructional material, and mentally thought through the process of shooting free throws during each practice session. The fourth group served as a control. None of the practice methods for shooting free throws proved to be superior statistically to the others. No significant change within groups was found from pretest to post-test.

398. BLAYLOCK, Jack Wanda. *The relationship of school and college ability test scores to motor ability test scores.* M.Ed., 1969. 40 p. (F. Pleasants)

The School and College Ability Test scores and Barrow Motor Ability Test scores were ascertained for 100 16- and 17-year-old boys, and the scores of the former, including the quantitative and verbal parts, were correlated with the Barrow test and each of its test items. None of the correlation coefficients was significant ($P > .05$).

399. DE SANTIS, Joan. *A survey of the health knowledge, health attitudes, and health practices of ninth and twelfth grade students of Summit, New Jersey.* M.Ed., 1969. 83 p. (R. McGee)

The Health Behavior Inventory, junior high level, was administered to students in the ninth grade, and the senior high level was administered to students in the twelfth grade. Results revealed that ninth grade girls

had better health knowledge, attitudes, and practices than ninth grade boys. Ninth and twelfth grade girls had better scores than the ninth and twelfth grade boys on the total inventories. A percent of Preferred Response revealed that ninth and twelfth grade girls outscored the boys on all content areas included in the inventories.

400. FEUERLEIN, Margaret. *Factors affecting the physical education grades of high school girls.* M.S. in Physical Education, 1969. 194 p. (C. Ulrich)

A selected sample of New Jersey SHS girls PE departments were questioned to obtain information concerning similarities and differences in various PE practices. Data of a 45% return of the questionnaires were classified in a series of 22 conceptual questions, in order to ascertain possible factors affecting the evaluation procedure as it related to grading. Through the use of percentages and empirical analysis of the data, an evaluation profile was developed indicating the similarities, differences, and extraneous factors affecting evaluation.

401. FRANKEL, Lora Strasser. *Antithesis.* (An 8 mm film of the dance is available for consultation at the Walter Clinton Jackson Library at the University of North Carolina at Greensboro.) M.F.A. in Dance, 1969. 19 p. (V. Moomaw)

"Antithesis" is a large group dance using the elements of contrast in design, rhythm, group dynamics, and mood. Two groups, one aggressive and the other passive in character, oppose one another throughout most of the dance. The aggressive group's movement is strong, angular, and opposing, while that of the passive group is soft, curved, and lyrical. The music is "Fantasy and Fugue" from *Studies in Improvisation* by Lukas Foss.

402. FULLILOVE, Margaret Ann. *A critical analysis of the problems encountered in posture research.* M.S. in Physical Education, 1969. 156 p. (C. Ulrich)

The purpose of this study was to evaluate the nature, cause, and effect of selected problems related to posture research in an effort to interpret the posture literature in a proper perspective and to grasp a better understanding of future approaches to research. The inadequacies of the tools utilized in research were discussed, these being definitions of the product, standards for evaluation, and methods and techniques of measurement.

403. JOHNSTON, Karla Ruth. *The relationship between the AAHPER youth fitness test and the twelve-minute test.* M.S. in Physical Education, 1969. 91 p. (R. McGee)

The 2 tests were administered to 47 women PE college majors. Significant relationships were found between the T-score totals of the AAHPER test and both the distance covered and the fitness categories of Cooper's Twelve-Minute Test. Other significant relationships were found between each item of the AAHPER battery and the T-score total of the battery. Five of these items, the 600-yd. walk-run, softball throw, standing broad jump, shuttle run, and bent-arm hang, also were significantly related to the Twelve-Minute Test. None of the items of the AAHPER battery was

closely enough related to be used to replace either the total battery or the Twelve-Minute Test. However, the relationships which were significant indicated that the tests are probably at least partial indicators of both motor and cardiorespiratory fitness.

404. LAMBERT, Ann Thomas. *A basketball skill test for college women.* M.S. in Physical Education, 1969. 49 p. (G. M. Hennis)

The Glassow, Colvin, and Schwarz bounce and shoot skill test was selected for further investigation because it combined the essential skills of basketball with gamelike situations which could be objectively measured and was easy to administer. The original version of the bounce and shoot skill test was administered to 25 members of women's intercollegiate basketball teams. A revised form of the test which omitted the subjectively imposed penalties of running with the ball, double bounce, and failure to start from behind the 24-in. line was administered to the teams. All players were rated subjectively on playing ability by 3 judges during the regular season games. The highest validity coefficients obtained were $r = .73$ for time in the original test and $r = .65$ in the revised test. Accuracy alone or twice accuracy combined with time was not valid for either the original or revised form of the test. Coefficients between the original and revised forms of the test indicated that time alone ($r = .86$) or twice time plus accuracy ($r = .89$) of all the scoring methods produced results with the highest degree of agreement.

405. LEHMAN, Carole Alma. *Chrysoprase.* M.F.A. in Dance, 1969. 58 p. (V. Moomaw)

"Chrysoprase" is a mood dance based on a quote from a poem by Anne Lloyd. It means, literally, a light green quartz. The choreography has a lyrical quality and is similar in structure to that of the music. Emphasis is placed on body and spatial design in an impersonal approach. The quality of the dance is expressed not only by kinetic, flowing movement, but also by the use of green in the lighting, costumes, and the 3 green drapes which also act as narrow scrims.

406. LOWE, Jennifer Kaye. *Credo.* M.F.A. in Dance, 1969. 51 p. (V. Moomaw)

"Credo" is a dramatic dance based on the martyrdom of Saint Agnes. The dance begins with the pagan virgins performing their morning ritual for the magistrate and his son. Agnes, a young Christian, enters to pray in preparation for taking her vow of chastity. Joined by her companions, she makes the pledge and all dance in praise. Eutropius sees her, falls in love, and offers her the royal symbol as an engagement gift, which she rejects. Eutropius enlists the aid of his father, who condemns her to death when she will neither break vow and marry Eutropius nor forsake her religion and join the pagan virgins. The costumes are a combination of abstract design and of late Roman and early medieval qualities. Each dancer has a movement theme. Those of the pagan virgins, Eutropius, the magistrate, and the guard are related in movement, in stage area, and in spatial design, while Agnes and her companions use other spatial design centered around the cross with very lyrical movement.

407. NEAVE, Patty Jane. *A study of the opinions of parents of ninth grade girls at Jamestown Junior High School, Jamestown, North Carolina, concerning family life education, including sex education.* M.Ed., 1969. 69 p. (E. B. White)

An opinionnaire was constructed for the purpose of obtaining opinions from parents concerning the teaching of family life education in the public school. A total of 176 opinionnaires was sent with 90 returned. Parents felt that they should assume the major responsibility of family life education. However, they also felt that there was a need for this instruction to be done outside the home, and designated the school as the institution with the greatest responsibility in this area. In choosing a grade level for the initiation of such a program, grades 6, 7, and 5 (in that order) were suggested most frequently. Parents also preferred a teacher who was specially prepared in the area of family life education.

408. RINK, Judith E. *An evaluation of the movement responses of four first grade boys to teacher-stated movement problems.* M.S. in Physical Education, 1969. 115 p. (M. Riley)

The study was conducted at the University Elementary School of the University of North Carolina at Greensboro. Two observers were used to observe the 4 Ss in PE classes over a period of 7 weeks, or 13 lessons. Objective and reliable tools were designed for the evaluation of movement responses and for the analysis of movement problems. The results of the study were presented in the form of a case study for each of the 4 Ss.

409. ROZZI, Louise Maria. *A cinematographic analysis of the lacrosse cradle.* M.S. in Physical Education, 1969. 52 p. (F. Pleasants)

The skill was executed by 2 individuals of differing experience in the game of lacrosse. Analysis was, in some instances, facilitated by comparing Ss' execution of the skill, but comparison was not the primary purpose of this study. Two 16 mm Bolex movie cameras remained fixed and focused on the filming area. Ss were directed to maintain their run between vertical standards and relatively close to a line so that any additional perspective errors were eliminated. Generally, the cinematographic analysis of the skill performance proved to be in accordance with the opinions of experts. The major distinctions between opinion and performance were found to be in the position of the forearm in relation to the ground and the waist of the Ss and the position of the crosse to the ground.

410. SAMUELSON, Genelie Faye. *The effects of a specially structured seven-week physical education class upon the self-concepts of low self-esteem tenth grade girls.* M.Ed., 1969. 98 p. (G. M. Hennis)

SHS girls served as Ss, 14 as members of the 7-week experimental class, and 14 as controls. Prior to and following the 7-week period, each S rated herself on Coopersmith's Self-Esteem Inventory (SEI) and was rated on her self-esteem by 2 of her teachers using Coopersmith's Behavior Rating Form (BRF). The Fisher exact probability test revealed that the experimental group scored significantly higher on the post-test self-esteem inventory than did the control group. The Sign test showed that there were no significant changes within either group from pre- to post-test on

SEI and BRF scores, grade point averages, or days present in school. In case studies kept on the experimental Ss, several of them showed increased self-confidence and self-direction in their PE activities.

411. STARTS, Minnette Louise. *Mardi Gras 1900.* M.F.A. in Dance, 1969. 101 p. (V. Moomaw)

"Mardi Gras 1900," a dramatic ballet in 2 scenes, depicts the essence of a Mardi Gras day in 1900. In the first scene an atmosphere of festivity unfolds on a scene that can be found on any street on Mardi Gras day in "the city that care forgot." The band parades; a marionette and a clown, a Russian dancer and 2 ballerinas entertain the crowd. The crowd, becoming very jovial, dances and even goes so far as to taunt a policeman. There is much merrymaking and a good time is had by all. As evening draws near, the setting is changed to a ballroom. The maskers are led in a processional by the King and Queen of Mardi Gras. After the processional the 2 ballerinas entertain the King and Queen with their dancing. The maskers join the ballerinas for the final dancing after they have tossed their doubloons to the audience.

412. STRICKLAND, Thomasena. *A study of motor ability, activity selections, and attitude of college women.* M.Ed., 1968. 74 p. (R. McGee)

A comparison was made of a 1966 and a 1967 administration of the Scott General Motor Ability Test scores for the women students in the class of 1970 at the University of North Carolina at Greensboro. The amount of change in the battery T-score was studied in relation to activity selections and attitudes. The increase group included those students whose total T-score had improved 5 or more points. The scores had decreased 5 or more points for the other group. Changes in the battery score and for each of the 3 items were significant ($P < .05$) with the exception of the obstacle race item. The attitudes of both groups were similar and seemed not to have an effect on the 2 motor ability test scores. Activity selections were similar for the most part, but some few selections indicated a possibility of relationship to general motor ability scores.

North Carolina Central University, Durham, North Carolina

(R. E. Townes)

413. BOST, Charles A., Jr. *A study to determine the cohesiveness between athletic and nonathletic groups at Concord Senior High School, Concord, North Carolina.* M.S. in Physical Education, 1969. 48 p. (R. E. Townes)

The Bernard Goldman Test of Group Cohesiveness was administered to 170 SHS Ss in Concord, North Carolina. This group was made up of the band, choir, baseball squad, and football squad. The baseball squad was the most cohesive group and the band the least cohesive group. The athletic groups, baseball and football squads, were more cohesive than the band or choir. The 2 athletic groups differed significantly in group co-

hesiveness from the band and choir. There was no significant difference between the cohesiveness of the band and choir, and there was no significant difference between the cohesiveness of the baseball squad and football squad.

414. DAVIS, Cleo, Jr. *Reaction time of women physical education majors and nonmajors.* M.S. in Physical Education, 1969. 33 p. (R. E. Townes)

Two women's college groups, PE majors (N=25) and nonmajors (N=31), were tested with the Fred B. Nelson Hand and Foot Reaction Timer. The hand reaction time and foot reaction time of the majors was superior ($P < .01$) to the nonmajors. Both the majors and the nonmajors were more variable in foot reaction time than in hand reaction time.

415. MCLAURIN, Jerome D. *Proficiency of Negro college women in elementary swimming classes.* M.S. in Physical Education, 1969. 32 p. (R. E. Townes)

A sample of 40 college women students was given the American Red Cross Beginner's Swimming Test. Thirty-three Ss completed the test in the allotted time. One S completed the test in 4 days, and 5 Ss completed it in 5 days. Six Ss learned finning and the kick glide in back position in one day. The 7 Ss not completing the test in the allotted time failed from one to 4 skills; that is, 7 failed the kick glide in back position, 6 failed finning, 2 failed the human stroke, and one failed the prone kick glide.

416. WILLIAMS, Luther, Jr. *The relationship between physical fitness and social adjustment of male students.* M.S. in Physical Education, 1969. 33 p. (R. E. Townes)

The AAHPER Youth Fitness Test and the Washburne Social Adjustment Inventory were administered to 100 male college freshmen. The physical fitness status of these Ss, as a group, was below the 50th percentile. These Ss scored best on arm and shoulder girdle strength, and explosive muscle power of the legs, and worst on speed and change of direction. They scored best on the social trait reliability and sense of well-being, and worst on alienation. There was little or no relationship between physical fitness and social adjustment.

Northern Illinois University, DeKalb, Illinois (F. Stroup)

417. DUNN, John M. *An investigation of the Ohio State University Step Test as an instrument for assessing the cardiovascular efficiency of 13-18 year old boys.* M.S. in Education, 1969. 61 p. (H. P. Wells)

SHS Ss (N=73) enrolled in 3 PE classes were administered the Ohio State University Step Test, the Harvard Step Test, and a 12-min. endurance run. A correlation of .78 was obtained between scores on the Ohio State University Step Test and the Harvard Step Test. A correlation of .42 was obtained between scores on the Ohio State University Step Test and the 12-min. endurance run. A reliability coefficient of .95 was obtained on the Ohio State University test, when 30 Ss selected at random took the test a second time.

North Texas State University, Denton, Texas (J. E. Douthitt)

418. CAMP, Barbara A. *The effects of viewing loopfilm on tennis skill and form.* M.S. in Physical Education, 1969. 80 p. (I. Caton)
SHS girls (N=69) enrolled in beginning tennis classes performed the Broer-Miller Tennis Achievement Test, the Hewitt Revision of the Dyer Backboard Tennis Test, and the Camp Tennis Form Test at 3 different times during a period of 10 weeks. Initial testing was followed by 2 weeks of training using the traditional teacher demonstration-verbal explanation method of teaching. The intervening tests were then administered and Ss were randomly assigned to experimental or control groups. Five weeks of training followed, with the same teaching method and teacher for each group, except for the experimental group which received the additional aid of viewing loopfilm. The final tests were then administered. Both the experimental and control groups made significant gains in skill and form between the initial and intervening tests and between the initial and final tests. Significant gains were also made between the intervening and final tests on the Hewitt test and the Camp test, but no significant gains were made on the Broer-Miller test. No significant differences were found between the experimental and control groups on any of the 3 tests.

419. DUNGAN, Hubert G. *A study of the administrative and curriculum procedures used for the development of skills of men physical education majors in state supported colleges and universities in thirteen selected states in the southeast portion of the United States of America.* M.S. in Physical Education, 1969. 57 p. (J. Watson)
Seventy-eight of 106 chairmen of departments in state-supported colleges and universities returned completed questionnaires to provide data relative to skill development by men PE majors. In a majority of the schools a record of skill development was kept; however, no tests were administered to determine level of proficiency. A majority of those responding indicated that it would be desirable to administer tests to men majors prior to graduation to ascertain skill level in a variety of activities.

420. GREEN, Marjorie L. *The effect of competitive basketball experiences upon selected personal and social behavior patterns of girls in the Gainesville State Training School.* M.S. in Physical Education, 1969. 87 p. (W. Wyrick)
The California Test of Personality, Secondary Series, was administered to 50 girls, ages 14 to 18, in the State Training School at Gainesville, Texas. Different forms of the test were administered before and after participation in competitive basketball, choir, and a group that participated in no extramural activity. When scores for all 50 Ss were compared with the norms, they deviated significantly on the factors of withdrawal tendencies, nervous symptoms, and antisocial tendencies. Scores of the basketball group were superior to both the choir group and the control group on 7 factors. During the season the basketball group received fewer Behavior Reports than did either of the other groups. Sociometric ratings indicated that the basketball group contained girls who averaged a higher social status than either of the other groups.

421. KNIGHT, Linda E. *The relationship of the repeated wall volleys, the volleyball pass, and volleyball playing ability of eleventh grade girls.* M.S. in Physical Education, 1969. 53 p. (I. Caton)
Eleventh grade girls (N=120) performed at volleyball wall volleys, the volleyball pass, and in game situations. Data for determining the relationship of these skills were scores from the administration of Mohr and Haverstick's Repeated Wall Volleys Test, Liba and Stauff's Volleyball Pass Test, and ratings by 4 judges using Suttinger's Rating Scale. Tests were administered at the end of a 6-week volleyball unit. Correlations were computed between scores on each of the tests. It was concluded that Liba and Stauff's Volleyball Pass Test and Mohr and Haverstick's Repeated Wall Volleys Test at the 7-ft. restraining line may be used to predict playing ability as measured by Suttinger's Rating Scale.

422. LEVY, William C. *The effects of three conditions of practice on the performance of the football center snap by college students.* M.S. in Physical Education, 1969. 26 p. (J. Watson)
Scores on the Football Center Snap Test were recorded for 75 college males prior to and at the end of 15 class periods during which Ss practiced under one of 3 conditions or as a member of a control group. One group practiced snapping the football physically 6 times during each of the class periods; a second group practiced 6 times mentally; and a third group practiced 6 times mentally and 6 times physically during each class period. The instrument to test accuracy was constructed by mounting a regulation basketball goal vertically on a platform and at a height consistent with the placement of the holder's hands in the actual performance of placement kicks in attempting field goals or extra points. The group that practiced both physically and mentally recorded a significant gain from initial to final test; however, this group was not significantly better than any of the other groups.

423. ROZICH, William F. *A survey of the men's physical education program at North Texas State University.* M.S. in Physical Education, 1969. 116 p. (J. Watson)
The Neilson-Comer-Griffin Score Card was used to collect data relative to the status of the men's PE program at North Texas State University during the spring semester of the 1968-69 school year. Elements of the program were evaluated according to standards set by the score card in each of several areas.

424. WILLIAMS, Celia. *Wall volley test performance as a function of grip and wrist strength.* M.S. in Physical Education, 1968. 102 p. (W. Wyrick)
Thirty college women who had previously taken part in the sports of tennis, badminton, and volleyball performed on wall volley tests in each of the sports and on tests of grip strength and wrist flexion. Criterion strength measures, administered 2 weeks after initial measures, were used to match 2 groups on the basis of wrist and grip strength. The experimental group was subjected to 2 weeks of isometric strength training of the grip and wrist flexors and extensors. Final wall volley and strength tests were then administered to both groups. Experimental group

means increased significantly among the initial, criterion, and final strength measures. The control group did not exhibit an increase between the criterion and final measures. Results indicated that skill in tennis was related to grip and wrist strength; skill in volleyball was related to right wrist strength, left wrist flexion, and grip; and skill in badminton was related to grip and wrist strength.

Ohio State University, Columbus, Ohio (D. K. Mathews)

425. ADOLPH, John T. *The effects of ethyl alcohol on physical performance.* Ph.D. in Physical Education, 1969. 67 p. (D. K. Mathews)

The Balke Treadmill Test was used to determine the effects of ethanol on physical performance. Heart rate was increased during rest, exercise, and recovery 3 hours after ingestion of alcohol compared with an 11-hour post-ingestive period and in a control condition. Oxygen consumption and ventilation were not affected.

426. BILES, Fay R. *Self-concept changes in college freshman women in a basic physical education course using two methods of instruction.* Ph.D. in Health and Physical Education, 1968. 110 p. (C. Hixson)

Three groups of freshman college women at Kent State University showed that self-concept changes occurred with those involved in a basic course. Instrument used was a Q-Sort showing discrepancy correlation between perceived and ideal self. ANOVA and the Newman-Keuls Multiple Comparison method were the statistics used.

427. CAMAIONE, David N. *A comparison among three tests for measuring maximal oxygen consumption.* Ph.D. in Physical Education, 1969. 37 p. (D. K. Mathews)

The purpose was to construct a maximal oxygen consumption test and compare it to 2 known tests. The variables measured were: $\dot{V}O_2$ liters/min., $\dot{V}O_2$ ml/kg/min., $\dot{V}_{EBTPS}$, and maximal heart rate. ANOVA revealed no significant differences among the means.

428. DEBACY, Diane L. *The effect of viewing video tapes of a selected sport skill performed by self and others on self-assessment.* Ph.D. in Physical Education, 1969. 100 p. (L. A. Hess)

It was the purpose of this study to investigate the accuracy of self-assessment of the golf swing by women students in beginning golf classes and to determine the effectiveness of videotape replay in reducing any difference between actual and self-assessed skill. A scale utilizing model performances was used as the basis for all scores.

429. DE GENARO, Arthur P. *Experimental use of the videotape recorder as an evaluative instrument and observational tool in the supervision of student teachers of physical education.* Ph.D. in Physical Education, 1969. 60 p. (L. A. Hess)

The study dealt with the use of the videotape recorder (VTR) as a means for evaluating student teachers. The VTR results were compared with

those obtained when the student was rated through direct observations. VTR can be used effectively in evaluating student teachers.

430. DOUGLAS, John W. *An analysis of administrative leadership in physical education departments.* Ph.D. in Physical Education, 1969. 165 p. (L. A. Hess)
A modified version of Rensis Likert's Profile of Organizational Characteristics was used to analyze administrative leadership in undergraduate PE departments within Ohio's institutions of higher education. Results indicated that these departments were administered by chairmen who involve their faculties in a participative form of governance.

431. GOULDING, David V. *The relationships of two cardiovascular step tests with selected anthropometric measurements of college men.* M.A. in Physical Education, 1969. 21 p. (D. K. Mathews)
The relationships of 2 cardiovascular step tests with selected anthropometric measurements of 30 college men were examined. Significant negative correlations were found between measures of body shape, body composition, and Harvard Step Test scores. None of the anthropometric measurements correlated significantly with the Ohio State University Step Test results.

432. HELLISON, Donald R. *The effect of physical conditioning on affective attitudes toward the self, the body, and physical fitness.* Ph.D. in Physical Education, 1969. 111 p. (M. Mordy)
Nine measures for physical fitness and affective attitudes administered before and after an 8-week program were compared for 3 groups of male college students. Both experimental groups improved physical fitness scores, but only the 4 day/week group improved self-attitude in comparison to the controls. The influences of physical activity history, socioeconomic status, and prior physical fitness knowledge were also studied.

433. KALAMEN, Jerome L. *Measurement of maximum power in man.* Ph.D. in Physical Education, 1968. 57 p. (D. K. Mathews)
The purpose of this study was to adapt a stair-running test to measure maximum power in man, correlate the Sargent Jump with stair running, and determine if results of the 2 tests could be used to predict success in sprinting Running stairs 3 at a time with a 6-meter start achieved maximum power. Correlations between jumping and stair running were insignificant The maximum power test adequately predicted success in sprinting.

434. LIESE, James E. *Short-term memory for a motor response.* Ph.D. in Physical Education, 1969. 55 p. (C. G. Hixson)
Retention of a linear motor response was examined using retention intervals of 2, 4, 8, 16, and 32 sec. Error was smallest at 2 sec. and greatest at 8 sec ($P < .05$). A reminiscence effect occurred for the 16- and 32-sec. retention intervals.

435. MCCUALSKY, Mary A. *Differences between physically active and inactive college women in selected physical, social, and psychological traits.* M.A. in Physical Education, 1969. 93 p. (M. M. Yost)
Selected variables were examined to determine differences which might exist between groups of college women differing in patterns of physical activity. Variables most greatly influencing participation were family background and past experience, with some significant personality differences existing between the 2 groups.

436. PARSONS, Terry W. *A descriptive analysis of the achievement level realized by grant-in-aid athletes as compared to matched non-athletes at the Ohio State University.* Ph.D. in Physical Education, 1969. 173 p. (L. A. Hess)
A group of 115 grant-in-aid athletes at Ohio State University realized a greater degree of academic achievement than did a group of matched non-athletes of very similar academic potential. A significantly greater proportion of the athletes graduated, equalled or surpassed their predicted grade point averages, and avoided academic dismissal.

437. WITTEN, Charles X. *The effects of three liquids on absorption rate and work performance in college men.* Ph.D. in Physical Education, 1969. (D. K. Mathews)
Coca Cola, water, and Gatorade as contrasted with no liquid replacement were compared to see which one was absorbed most rapidly following a period of dehydration. The effects of rehydration on performance were then measured. Plasma sodium concentration for water and Gatorade were significantly lower than for Coca Cola and no replacement. Potassium concentration diminished throughout the experiment. Gatorade was absorbed as rapidly or possibly faster than water. Performance time to exhaustion was not significantly altered following use of each of the 3 drinks.

Oklahoma State University, Stillwater, Oklahoma (A. B. Harrison)

438. BENDER, Cynthia. *A comparison of tenth grade girls participating in a "required" physical education program.* M.S. in Physical Education, 1969. 54 p. (A. B. Harrison)
The Wear Attitude Inventory was administered 5 times during a year for one PE class and 3 times during a semester for another class. These classes consisted of tenth grade girls. Each class was divided into 2 groups, one with some choice of activities and one with no choice. Means of the attitude inventory scores were compared between the choice and no-choice groups to see if having some choice in selection of activity had any effect on attitude toward PE. Although the groups started out with no difference in attitudes toward PE, *t* ratios showed a significant improvement in attitude toward PE in the groups that were given some choice in selection of activities. There were definite improvements in attitude shown in the choice groups as early as 9 weeks after beginning class.

439. DOBSON, Max. *An investigation of the status of physical education and interscholastic sports in grades four through six in the State of Oklahoma.* Ed.D. in Higher Education. 126 p. (A. B. Harrison)

A preliminary questionnaire was sent to 690 elementary schools in Oklahoma. Returns were used to classify the school as to type of program being offered: PE, interscholastic sport, or combination. A stratified random sample of 50 schools was selected and visited for a personal interview with the PE teacher or administrator. Over 50% of the schools offered some type of interscholastic sports program, with basketball, baseball, and football the most popular. PE oriented schools offered a much wider range of activity skills to the students. It was also found that the varsity sports teams in the communities of the PE oriented programs had significantly better won-loss records.

440. JAMISON, John. *The effects of an exercise program on the oxygen saturation levels of smokers and nonsmokers.* M.S. in Physical Education, 1969. 38 p. (A. B. Harrison)

Fifteen smokers and 17 nonsmokers were compared on resting and exercise pulse rates and oxygen saturation levels. The exercise was a standardized 10-min. treadmill walk. Resting pulse rates were significantly lower for the nonsmoking group. Resting oxygen saturation levels were significantly higher and exercise pulse rates lower for the nonsmoking group. Exercise oxygen saturation levels were significantly lower for the nonsmoking group.

441. McCURRY, Betty Nan. *The development of physical education for women at Oklahoma State University.* M.S. in Physical Education, 1969. 73 p. (A. B. Harrison)

The historical method was used to trace the development of the womens' PE program at Oklahoma State University from the first class in "Physical Culture" offered in 1898 to the building of a new multimillion-dollar PE complex in 1969.

442. SIMS, Reba Sue. *A study of the effects of a swimming program for slow readers in relationship to perceptual-motor ability and reading ability.* M.S. in Physical Education, 1969. 46 p. (R. Lindsey)

Three groups of 8 each elementary school age slow learners were used as Ss for a 5-week period. One group participated in a special PE activities class. The second group had a daily period of swimming instruction. The third group was a control group. Groups were equated on the basis of IQ scores. Each group was tested in reading ability and perceptual-motor ability before and after the experimental period. No significant changes were found in the control group or the swimming group. In the special PE group there was no significant change in reading ability but there was significant improvement in perceptual-motor ability.

443. WATTENBARGER, Sondra. *The effects of pacing on heart rates during rope jumping.* M.S. in Physical Education, 1969. 51 p. (A. B. Harrison)

JHS girls (N=187) were given a rope jumping skill test as part of a physical fitness testing program. The test was to see how many jumps could be accomplished in 2 min. Ss were then retested using a cadence provided by a metronome. Heart rates were taken immediately after each

jumping test. The girls scored significantly more jumps on the paced test and had significantly lower heart rates at the end of the paced test as compared to the unpaced test. Those classed as skilled jumpers had significantly lower heart rates at the end of the jumping than those classed as unskilled jumpers.

University of Oregon, Eugene, Oregon (E. R. Reuter)

444. BAILEY, Don C. *Longitudinal analysis of strength and motor development of boys ages twelve through seventeen years.* Ed.D. in Physical Education, 1968. 220 p. (H. H. Clarke)

Longitudinal analyses were made of 111 boys from ages 12 to 17 years. Ss were tested in cable-tension strengths of individual muscle groups, dynamometric strengths, gross and relative strength batteries, muscular endurance, and motor ability elements. The analyses employed were inter-age correlations among all ages for each variable; means, standard deviations, ranges, and coefficients of variation; construction of mean growth and mean velocity curves; differences in growth patterns for high and low skeletal age groups, mean cable-tension strength groups, and Physical Fitness Index groups. Ten of the 14 variables studied had a moderate degree of inter-age consistency, especially when the correlations were between adjacent ages. As the boys advanced in age, the means on all measures increased except for the PFI (which is logical, since the norms from which the PFI is derived are based on age and weight). The longitudinal changes in absolute variability were not consistent. Differences between high and low skeletal age groups and high and low cable-tension strength groups formed at age 12 years maintained significance on most other tests through 17 years of age.

445. BELL, Robert D. *Climbing apparatus in the development of muscular strength and endurance of fourth grade elementary school boys and girls.* Ph.D. in Physical Education, 1968. 187 p. (H. H. Clarke)

Ss were 130 boys and 145 girls in the fourth grade of the elementary schools of Victoria, British Columbia. For boys and girls separately, 3 groups were formed: experimental group A was taught and practiced specific stunts on "Hingu" climbing apparatus; group B played on the "Hingu" apparatus at will; the control group was taught and practiced individual and dual stunts with small equipment. The experiment ran for 10 weeks. The effects of the programs were measured by use of the Oregon Motor Fitness Test and the Strength Composite and Strength Quotient, new cable-tension strength test batteries constructed at the University of Oregon. Analysis of covariance was used to test the differences between the final means adjusted for differences in beginning means. For girls, significant increases in all tests were made; the differences between the treatments were not conclusive. For boys, significant increases were obtained for the motor fitness test items and battery and for one of the 5 cable-tension strength tests; the stunt-type activities (control group) seem favored over the activities on the climbing apparatus.

446. BERRINGER, Orville M. *Bases of norms for cable-tension strength tests for upper elementary, junior high, and senior high school boys.* Ph.D. in Physical Education, 1968. 167 p. (H. H. Clarke)

Criterion for strength was the mean of 25 cable-tension strength tests at each school level; the tests to determine the bases for norms were 12 anthropometric measures and 24 indexes derived from these measures. Ss were 72 boys (24 from each grade) at each level: upper elementary, JHS, and SHS. Zero-order and multiple correlations were computed for each school level and for all school levels combined (216 boys). The multiple correlations by school level did not exceed .86; this correlation was for elementary school boys with weight and shoulder width/chest girth as the independent variables. When all grades were combined, a multiple correlation of .91 was obtained with 2 independent variables, age and weight Age and weight were subsequently used in other research as the bases for cable-tension strength test norms.

447. BRACEWELL, Michael B. *A comparison of the effectiveness of two methods of teaching a gross motor skill.* M.S. in Physical Education, 1969. 100 p. (W. B. Brumbach)

Children (N=54) from one kindergarten were assigned randomly to experimental procedures: visual-verbal, visual, general practice, and control. The classes were taught the overarm throw for 4 weeks. Objective measurement of performance was undertaken on initial, final, and retention tests. Subjective assessments of style were made on final and retention tests only. The results indicated that instruction may bring about some improvement in throwing style, but this improvement is not accompanied by an improvement in performance. The improvement in style continued during the retention period. The use of verbalization appeared to have little or no effect upon the learning and retention of objective performance. However, subjective assessment indicated that verbalization accompanying demonstration does improve learning. Verbal instructions were restricted specifically to drawing attention to the main aspects of a demonstration important for success. Finally, when learning ability is related to retention, the difference between boys and girls at this age did not appear to affect their learning ability permanently.

448. BUHRMANN, Hans G. *Longitudinal study of the relationship between athletic participation, various social-psychological variables, and academic achievement of junior high school boys.* Ph.D. in Physical Education, 1968. 213 p. (L. R. Geser)

Athletes and nonathletes were compared on the basis of total and yearly GPA, English, Mathematics, ITBS, and ITED scores, as well as socioeconomic status, peer status, and self-concept. The athletes exceeded nonathletes significantly in all measures of scholarship. Athletes participating for many seasons and years were academically more successful than those participating for few seasons and years. Popularity of sports and quality of athletic participation did not markedly influence the relationship between athletes and scholarship. Peer status and self-concept were strongly related to athletic participation and academic achievement. When peer status and self-concept were controlled, the relationship between athletes and scholarship did not change markedly.

449. CROSS, John A. *Relationships between selected physical characteristics of boys at twelve and fifteen years of age and their personality characteristics at eighteen years of age.* Ed.D. in Physical Education, 1968. 246 p. (L. R. Geser)

Longitudinal relationships were examined between 15 measures of physique, physical structure, strength, and motor ability, and scores on California Psychological Inventory scales of 121 boys in the Medford, Oregon, Boys' Growth Study. Product-moment correlations, one-way ANOVA, and differences between group means techniques were utilized. Mesomorphs were found to be dependable, moderate, conscientious, while ectomorphs were aloof, awkward, and insecure. The maturer boys were described as enthusiastic, spontaneous, patient, and cooperative. Energetic, ambitious, and sociable qualities were attributed to the heavier and more rotund boys. Superiority in right grip was related to apathetic, awkward, and detached traits, whereas the stronger boys in cable-tension strength average exhibited a wide relationship with positive personality traits. The better performers in standing broad jump were ambitious, aggressive, confident; the speedier boys in agility run were confident, outgoing, sociable; those faster in 10-ft. speed at 12 years were moody and headstrong, while those speedier at 15 years displayed traits of cleverness, imagination, self-confidence.

450. DAY, James A. P. *Longitudinal analysis of maturity and physical growth of boys ages seven through twelve years.* Ph.D. in Physical Education, 1967. 458 p. (H. H. Clarke)

Longitudinal growth analyses were made on 49 boys from ages 7 to 9 years and 99 boys from ages 9 to 12 years. Tests included maturity, body linearity, body bulk, and various indexes reflecting body proportions. Analyses employed were: inter-age correlations among all ages for each variable; means, standard deviations, ranges, and coefficients of variation; construction of mean growth and mean absolute and velocity curves; bar diagrams; differences in growth patterns for high and low skeletal age groups, gross strength groups, relative strength groups, weight groups, and standing height groups. All groups were formed at 9 years and followed through age 12 years. Maturity and physical growth tests showed generally high levels of inter-age consistency, especially between adjacent ages. As the boys advanced in age, their means on all measures but the indexes increased; the means of 3 indexes increased and decreased at the different ages; the mean of sitting height/standing height steadily decreased. Absolute variability also increased with age with the exception of sitting height/standing height, where it was constant throughout the ages. Differences between high and low skeletal age groups, gross strength groups, weight groups, and height groups formed at age 9 years maintained significant mean differences on the other tests.

451. DINUCCI, James M. *Longitudinal analysis of the academic achievement and intelligence of boys nine to seventeen years of age as related to selected physical variables.* Ph.D. in Physical Education, 1968. 348 p. (H. H. Clarke)

Ss for this longitudinal analysis of the academic achievement and intelligence as related to various physical variables were 55 boys who had been

in the same grade from 1 through 11 in the public schools of Medford, Oregon. A consistent pattern of significant positive correlations was obtained between academic achievement and intelligence criteria and the physical variables of skeletal age, endomorphy, weight, standing height, and chest girth × height; consistent negative relationships were obtained for mesomorphy and Physical Fitness Index. Fifty-seven multiple correlations were computed utilizing the academic achievement criteria in turn as dependent variables. The range of multiple correlations was .277 to .698. The highest *R* of .698 was for Reading in Natural Science at age 15 years; skeletal age, hand-arm reaction time, and standing broad jump were the independent variables. Physical variables appearing in the greatest number of multiple correlations were standing height, .25; and standing broad jump, 10.

452. HANSAN, John F. *A job analysis of secondary school men physical education administrators.* Ed.D. in Physical Education, 1969. 412 p. (V. S. Sprague)

SHS PE administrators (N=557) representing 5 separate school enrollment divisions were surveyed and 50 were interviewed using a constructed job analysis instrument. One hundred and nineteen duties were distributed throughout 10 administrative categories: office management; professional growth and contributions; finances; facilities; public relations; personnel; purchase and care of equipment and supplies; intramural athletics; interscholastic athletics; and the instructional program. Statements of duties listed under the administrative categories were rated for frequency of performance, importance of performance, and difficulty of performance. Percentage ratings were computed for all enrollment divisions relative to the criteria measures of frequency, importance, and difficulty. Thirty-one duties received mean ratings which were considered as being frequently performed. Seventy-eight duties received mean ratings which were considered as being extremely important in their performance. No duty received mean ratings high enough to be considered difficult to perform.

453. JEROME, Wendy C. F. *A study of the personality characteristics of female athletes and nonparticipants.* M.A. in Physical Education, 1969. 108 p. (W. B. Brumbach)

The California Psychological Inventory was administered to 102 SHS female athletes and 54 nonparticipants. Athletes scored significantly higher on 10 of the 18 CPI scales than the nonparticipants, who in turn scored higher on one. Outstanding athletes were found to score significantly higher than substitutes on one scale and nonparticipants on 7. Average athletes scored significantly higher than nonparticipants and substitute athletes on 4 and 3 scales respectively. The substitutes scored significantly higher than the nonparticipants on 3 scales and lower on one. Team sports participants scored significantly lower than individual-dual participants on 5 scales and combined sports participants on 7 scales. No significant differences were found in comparisons among sports or by number of sports in which athletes participated. Comparing athletes and nonparticipants by grade, it was found that in Grade VIII 8 significant differences favored the athlete; in Grade IX there were no differences; in Grade X 3 significant differences favored the athlete; in

Grade XI the single significant difference favored the nonparticipant; in Grade XII 3 significant differences favored the athlete, the other favoring the nonparticipant.

454. KELLY, Brian J. *Single-year and longitudinal comparisons of maturity, physique, structural, strength, and motor characteristics of seventeen-year and eighteen-year-old high school athletes and nonparticipants.* Ph.D. in Physical Education, 1969. 463 p. (H. H. Clarke)

For single-year studies, Ss were: 160 at age 18, 46 athletes and 114 nonparticipants; 266 at age 17, 68 athletes and 198 nonparticipants. Ss in the 3-year longitudinal study (15 to 17 years) were 60 athletes and 148 nonparticipants. Athletic ratings made by the coaches were: 3, outstanding athlete; 2, regular player; 1, substitute; NP, nonparticipant. Differences between means of these groups of rated athletes and NP's on the experimental variables were tested for significance by ANOVA; the Scheffé test was applied to differences between paired means when significant *F* ratios were obtained. At 18 years of age, mesomorphy was the most useful differentiator of athletic ability, followed in order by calf girth, arm girth, weight, Strength Index, upper-body strength, lower-body strength, and Rogers' arm strength score. At 17 years of age, the best athletic differentiators in order were Rogers' arm strength score, weight, mesomorphy, lower-body strength, Strength Index, calf girth, and upper-body strength. For the longitudinal phase of the study, the most significant differentiators were Strength Index, mesomorphy, lower-body strength, calf girth, chest girth × height, weight, and Rogers' arm strength score. Tests which had little value as athletic differentiators were skeletal age, endomorphy, skinfold tests, Physical Fitness Index, and pull-ups.

455. LYNDE, Robert E. *Longitudinal analysis of interest scores of boys ten to twelve years of age as related to selected physical measures.* M.S. in Physical Education, 1968. 89 p. (H. H. Clarke)

Ss were 78 boys tested annually at ages 10, 11, and 12 years. The interest instrument was "What I like to do: An inventory of children's interests." Twenty-two of 24 inter-age correlations among the 8 interests in the inventory ranged from .32 to .64; the highest correlations were between adjacent ages; the highest such correlations were for the Science and Home Arts interests. Of 336 correlations between interest and physical variables, 21, or 6.2%, were significant ($P < .05$). Most of these significant correlations were negative or had negative connotations (as for the 60-yd. shuttle run).

456. LYNDE, Robert E. *Longitudinal analyses of occupational interest scores of boys fifteen through seventeen years of age as related to various physical characteristics.* Ed.D. in Physical Education, 1969. 124 p. (H. H. Clarke)

Ss were 124 boys, 15, 16, and 17 years of age. Parts of the Kuder Preference Record–Occupational, Form D, were utilized as the interest inventory criterion. Physical characteristics tested were maturity, physique type, body size, gross and relative muscular strength and endurance, and motor ability elements. Statistical analysis was by zero-order and multiple

correlation at each age; the Kuder occupational scores served in turn as dependent variables and the experimental measures constituted the independent variables. All 30 inter-age correlations for the 10 occupational interests were significant ($P < .01$), ranging from .41 between ages 15 and 17 years for Forester interest to .79 between 16 and 17 years for Psychologist–Industrial interest. Little relationship was found between the 10 occupational interests and the 19 physical variables at the 3 ages. The highest multiple correlations obtained were .46 for Electrical Engineer at age 17 years and .39 and .36 for Forester at ages 15 and 17 years. The most frequently appearing experimental variables in the multiple correlations were: endomorphy, total skinfold, cable-tension strength average, and 10-ft. run, in 5 each; and skeletal age, ectomorphy, Strength Index, bar dips, and total-body completion time, in 4 each.

457. MILLER, Jeffrey O. *Longitudinal analysis of the relationship between measures of self-differentiation and social interaction and selected physical variables in boys twelve to seventeen years of age.* Ed.D. in Physical Education, 1967. 195 p. (H. H. Clarke)

Ss were 54 boys, 12 through 17 years of age. Personality tests administered as appropriate for the ages were Davidson Adjective Check List, California Psychological Inventory, Cowell Personal Distance Ballot, Cowell Social Behavior Trend Index, and Garrettson–Symonds Interest Questionnaire. Experimental variables consisted of tests of maturity, physique type, body size and proportion, gross and relative strength, and motor ability elements. Most relationships between personality and physical variables were insignificant. However, summarizing 16 significant correlations with CPI items at age 17 years, the tall boy of high motor ability, with high relative strength, low adipose tissue, and high right and left grip strengths was favorably adjusted to his social environment. Also, the general profile patterns of the high positive self-determination boys at 12 years of age were associated with above average relative physical performance, were relatively unaffected by advanced or retarded physiological development, and tended to be associated with a mesomorphic physique.

458. MITCHELL, J. Reid. *Single-year and longitudinal comparisons of maturity, physique, structural, motor, and strength characteristics of fifteen-year-old junior high school athletes and nonparticipants.* Ed.D. in Physical Education, 1968. 536 p. (H. H. Clarke)

Ss were 219 boys in the ninth grade, 110 of whom had been tested annually for 4 years, ages 12 through 15. Athletic ratings by the coaches were: 3, outstanding athlete; 2, regular player; 1, substitute; NP, nonparticipant. The most consistent differentiators of athletic ability were Rogers' arm strength score, Strength Index, and standing broad jump. In addition, skeletal age, 60-yd. shuttle run, upper-body strength, lower-body strength, and Physical Fitness Index had considerable differentiating effectiveness. The poorest differentiators were ectomorphy, endomorphy, calf girth, total-body reaction time, and pull-ups; also low as differentiators were standing height, weight, upper arm girth, and chest girth × height.

459. MOUTIS, Nicholas P. *Longitudinal analysis of academic achievement related to selected maturational, structural, strength, and motor characteristics of boys ten through twelve years of age.* Ph.D. in Physical Education, 1967. 167 p. (H. H. Clarke)

Ss were 90 boys initially in the fourth grade, who were tested annually from age 10 through 12 years. The scholastic measures were: Otis Quick-Scoring Mental Ability Test; Stanford Scholastic Achievement Test and its subtests; term and final grades in arithmetic, English, geography, reading, science, spelling, and history; term and final grade point averages. Experimental variables consisted of representative tests of maturity, physique type, body size, gross and relative muscular strength, muscular endurance, muscular power, speed and agility, and total-body reaction time. At all ages, the following tests correlated significantly with one or more academic criteria: skeletal age, standing height, sitting height, and Strength Index; the standing broad jump correlated significantly with these criteria at age 12 years. Generally, the effect of partialling the intelligence quotient reduced the size of the zero-order correlations. The highest multiple correlation was .40 at age 12 years between final grade point average and skeletal age, standing height, sitting height, and standing broad jump. Groups were formed of boys scoring consistently high and consistently low on physical measures. The measures which produced mean scholastic differences favoring the high group were skeletal age, ectomorphy, standing height, sitting height, upper arm girth, Strength Index, cable-tension strength average, 60-yd. shuttle run, standing broad jump, and total-body reaction time. Those favoring the low group were endomorphy, mesomorphy, bar dips, Rogers' arm strength score, and Physical Fitness Index.

460. ODGERS, Thomas W. *A study of the relationships between flexibility measures, skill performances, and chronological ages of six to thirteen year old boys.* M.S. in Physical Education, 1969. 138 p. (C. E. Brubaker)

Nineteen flexibility measurements and 4 measures of motor skill were taken on 160 boys in elementary school. Means for age groups showed significant differences in the following 5 measures: arm flexion-extension, trunk lateral flexion, trunk rotation, thigh rotation, and wrist flexion-extension. No significant differences were found between boys of various ages in the following 14 measurements: neck flexion-extension, neck rotation, neck lateral flexion, hand supination-pronation, thigh adduction-abduction, knee flexion-extension, trunk extension-flexion, hip extension-flexion, ankle flexion-extension, foot supination-pronation, elbow flexion-extension. In a comparison of the flexibility measurements of more skilled performers with less skilled performers, the more skilled were more flexible in the following 5 instances: neck rotation, trunk extension-flexion and trunk lateral flexion in the softball throw, trunk extension-flexion in the standing broad jump, and trunk extension-flexion in the 30-yd. run.

461. PHILLIPS, D. Allen. *Annual factor analysis of potential maturity indicators of the same boys from nine through sixteen years of age.* Ed.D. in Physical Education, 1968. 262 p. (H. H. Clarke)

Ss were 62 boys tested annually from 9 through 16 years of age. The maturity criterion was skeletal age. Forty-nine experimental variables

consisting of measures of physique type, body size and proportion, gross and relative strength tests, and motor ability elements were utilized. A factor analysis was made at each of the 8 ages by the principal axes method with varimax rotation. A general maturity factor was not obtained at any of the ages. Twelve rotated factors were identified in the study. Only 4 factors were found at all ages: body bulk-physique, body linearity, relative sitting height, and arm and shoulder endurance. Other factors with the number of ages in which they appeared were: hip-trunk strength, speed, and relative lung capacity in 7; leg-back lift strength and arm and shoulder strength in 5; and general strength in 2. Ages 9, 10, and 14 years were characterized by a large number of positive rotated factors. At age 11 years, a large number of negative rotated factors were obtained; these were interpreted as indicating a lag in most growth and development factors during this age. The factors of body bulk-physique, hip-trunk strength, and lower leg strength did not demonstrate a lag at any age in which they appeared in the rotations.

462. RANTA, Vicki Eileen. *H. Harrison Clarke: His life and contributions to physical education.* M.S. in Physical Education, 1969. 113 p. (B. McCue)

Henry Harrison Clarke, born June 30, 1902, in Tidioute, Pennsylvania, attended school in Tidioute and Westfield, New York, graduating in 1925 from the International YMCA Training School (Springfield College), Springfield, Massachusetts. In 1930, Clarke began graduate studies and teaching at Syracuse University. He received the master's degree in 1931, the doctorate in 1940, and eventually became director of intramurals. After World War II military service as a reconditioning specialist, Clarke went to Springfield College as director of graduate studies. He accepted the position of research professor at the University of Oregon in 1953. Dr. Clarke initiated the recording of research and other information on microcards. The Microcard Publication provides national service to the PE profession. Clarke conducted the 12-year Medford Boys' Growth Study made to record and analyze various growth aspects. His publications and nearly 80 dissertations have been written from the data collected. Over 140 of Clarke's articles have appeared in professional journals; he has also written several sizable textbooks and other materials.

463. RICHARZ, Wilbert H. *The relationship of physical performance at the United States Air Force Academy to subsequent officer performance.* Ed.D. in Physical Education, 1969. 104 p. (W. B. Brumbach)

Ss were the graduates of the first 3 classes to attend the Academy: the Class of 1959 (N=207), the Class of 1960 (N=227), and the Class of 1961 (N=217). Physical performance data included PE grades, intramural grades, intercollegiate grades, weighted athletic participation (achievement) scores, and Physical Aptitude Examination scores. Officer performance data included Officer Effectiveness Report scores and flying grades. The majority of all correlations for all classes were positive; a fairly substantial number of significant but low positive correlations were obtained between the physical performance variables and the officer performance variables; there was a general descending trend in the number of significant correlations obtained for each succeeding class; and significant but low positive canonical correlations were obtained

between some of the physical performance variables and the officer performance variables for the classes of 1959 and 1960.

464. SANTA MARIA, D. Laine. *Longitudinal analyses of maturity and physical growth for boys ages twelve through seventeen years.* Ed.D. in Physical Education, 1969. 304 p. (H. H. Clarke)

Longitudinal growth analyses were made of 123 boys from ages 12 through 17 years. Tests were of maturity, body linearity, body bulk, and indexes reflecting body proportions. Analyses employed were: inter-age correlations among all ages for each variable; means, standard deviations, and coefficients of variation, construction of mean growth and mean velocity curves; differences in growth patterns, high and low maturity, gross strength, relative strength, weight, and height groups. Except for lung capacity, the structural measures showed considerable inter-age consistency, between .64 and .97, with the highest correlations between adjacent ages and the lowest when 5 years intervened. As the boys advanced in age, their means on all measures but the indexes increased; generally, standard deviations also increased with age. Differences between high and low maturity groups, gross strength groups, weight groups, and height groups formed at 12 years of age maintained significant mean differences on the other tests for the 6 years of the study.

465. SEKERES, David J. *Relationships between selected physical, motor, scholastic, and psycho-personal factors and the skeletal maturity of nine, twelve, fifteen, and seventeen year old boys.* Ed.D. in Physical Education, 1969. 197 p. (H. H. Clarke)

Ss were 69 9-year-old, 50 12-year-old, 70 15-year-old, and 63 17-year-old boys. Based on skeletal age at each chronological age, Ss were formed into 3 maturity groups: retarded, normal, and advanced. At each age, these groups were contrasted on selected physical, motor, scholastic, and psycho-personal tests. Differences between means were tested for significance by ANOVA; the Scheffé test was applied to differences between paired means when significant F ratios were obtained. Skeletal age was significantly related to physical and motor variables, especially standing height, weight, chest girth × height, ankle plantar flexion strength, cable-tension strength average, standing broad jump, and athletic ratings. Little relationship was found between the skeletal age groups and scholastic and psycho-personal variables. Significant differences between the means of all experimental variables were most often obtained when the 15-year-old maturity groups were compared; the frequency of significant differences between the means of the 12-, 9-, and 17-year-old maturity groups followed in that order.

466. SINCLAIR, Gary D. *Stability of somatotype components of boys ages twelve through seventeen years and their relationships to selected physical and motor factors.* Ph.D. in Physical Education, 1969. 223 p. (H. H. Clarke)

Ss were 106 boys, 12 years of age, followed longitudinally to 17 years of age. Inter-age correlations for each of the somatotype components were all significant; the ranges of these correlations between adjacent ages were from .80 to .85 for endomorphy, .84 to .94 for mesomorphy; .86 to

.90 for ectomorphy. Ranges of correlations between somatotype components at each of the ages were: .07 to .37, endomorphy vs. mesomorphy; −.67 to −.76, ectomorphy vs. mesomorphy; −.61 to −.75, ectomorphy vs. endomorphy. A sizable number of differences between somatotype components occurred between ages 12 and 17 years, especially when ages intervened; the percentages of significant differences were 40 for endomorphy and 53 each for mesomorphy and ectomorphy. In a number of instances, multiple correlations of sufficient magnitude to warrant prediction of somatotype components were obtained at each of the 6 ages. Height-over-cube-root-of-weight correlated in the .90's with ectomorphy at all ages. Multiple regression equations were presented in the study.

467. SMITH, Peter E. *Investigation of total-body and arm measures of reaction time, movement time, and completion time for twelve, fourteen, and seventeen year old athletes and nonparticipants.* M.S. in Physical Education, 1968. 99 p. (L. R. Geser)

Comparative analysis was made of total-body and arm measures involving reaction time of boys at 3 different ages. Athletes in general were faster than nonparticipants at the ages measured. This study supported the concept that reaction time is an independent and unrelated variable. Also supported was the concept that there is not "a" reaction time or "a" movement time for a given individual. Total-body and arm measures of reaction time, movement time, and completion time demonstrated an inverse relationship with age from 12 years to 17 years. Total-body completion time proved to be the most significant test as a differentiator for successful participation in athletics.

468. SMITH, Richard J. *Relationships between gross and relative strength and the maturity, physique type, and motor ability elements of boys nine, twelve, fifteen, and seventeen years of age.* Ph.D. in Physical Education, 1968. 181 p. (H. H. Clarke)

The numbers of boys tested at the various ages were: 7 years, 113; 9 years, 175; 12 years, 278; 15 years; 343; 17 years, 272. Strength criteria were the average of 11 cable-tension strength tests and Strength Index for gross strength; in addition, the cable-tension tests were divided into upper-body and lower-body strengths. Rogers' Physical Fitness Index was utilized for relative strength. With the exception of endomorphy and bar dips, significant correlations were found with few exceptions between the gross strength criteria and the experimental variables. For the relative strength criterion, the significant correlations were not so prevalent except when correlated with motor ability tests. A tendency was found for correlations to be significantly higher at the younger ages. Multiple correlations at the five ages for the 5 strength criteria ranged from .54 to .80. The highest such correlations were .89 and .83 at ages 15 and 17 years for Strength Index and .86 and .81 at ages 17 and 15 years for Physical Fitness Index. The most prevalent variables appearing in the multiple correlations for the gross strength criteria were standing broad jump × weight, 60-yd. shuttle run, and Rogers' arm strength score; for PFI, the most prevalent tests were Rogers' arm strength score, bar dips, 60-yd. shuttle run, total-body completion time (10-ft. sprint), endomorphy (negative), and weight.

469. STAFFORD, Elba G. *Single-age and longitudinal comparisons of intelligence and academic achievement of elementary and junior high school athletes and nonparticipants.* Ed.D. in Physical Education, 1968. 180 p. (H. H. Clarke)

Ss in 2 single-age analyses were 142 sixth grade boys and 190 ninth grade boys. For the longitudinal analyses, Ss were 73 boys in elementary and 57 boys in JHS. The following athletic ability classifications based on ratings of coaches were utilized: 3, outstanding athlete; 2, regular player; 1, substitute; NP, nonparticipant. In this study, 481 analyses of variance were computed; of this total, 27, or 5.6%, were significant. None of the differences between the means of the intelligence quotients was significant. Although the number of significant differences between means was small, the most prevalent on standard academic achievement tests were: 3-rated athletes were superior to other 12-year-old groups in football, baseball, basketball, and track in language usage; the 1-rated basketball players from 9 to 11 years were lower than other groups in language usage, arithmetic computation, and arithmetic reasoning; the 15-year-old NP's and 1-rated track athletes showed superiority over other track athletes. For teachers' grades at age 12, the athletes were superior to NP's in grade point average and grades in mathematics, English, and social studies; 4-sport athletes had the same superiority over NP's, except for English grades.

470. WIREN, Gary. *Human factors influencing the golf drive.* Ph.D. in Physical Education, 1968. 144 p. (H. H. Clarke)

Ss were 51 right-handed males ranging in age from 17 to 69 years and with golf handicaps from 0–14. For the golf drive criterion, Ss drove 3 golf balls their maximum distance with a driver club; the longest drive was taken. The experimental measures consisted of 11 anthropometric, 3 flexibility, and 16 strength (all but 2, cable-tension) tests. In addition, 14 Ss were filmed during their drive with a Fastax WF3 16 mm movie camera with a 13 mm Raptar lens and General Electric powerstat; measures from the film provided timing variables. Of the 4 factors which were measured in the study, strength and timing were most highly related to the drive for distance. Anthropometric measures and flexibility were important, but to a lesser degree. Multiple correlations were sufficiently high (.90 and above) to warrant computation of regression equations from which to predict driving distance; these equations appear in the study.

Pennsylvania State University, University Park, Pennsylvania
(E. A. Gross)

471. BARRETTE, Gary T. *The effect of blindfold practice on basketball free throw accuracy.* M.Ed. in Physical Education, 1969. 60 p. (E. A. Gross)

Ninety semi-skilled college freshmen were divided into 6 groups of 15 Ss each, selected on the basis of free throw scores on an initial test. Groups

1 to 4, inclusive, were designated as blindfolded groups; Group 5 as the sighted group; and Group 6 as the control group. Ss in each group shot 20 free throws on the initial and final tests, rotating after each shot; Groups 1 to 5, inclusive, also shot 20 free throws in each of 10 practice sessions (twice a week for 5 weeks) using an assigned practice procedure. Verbal cueing was used to inform the blindfolded shooters of the distance and direction errors after each shot. No significant differences were found among the means of the sighted and blindfolded groups in free throw shooting accuracy on the final test. However, 2 groups significantly improved from the initial to the final test. They were Group 4 (blindfolded and practiced shooting free throws 10 at a time) and Group 5 (sighted and practiced shooting free throws 3 at a time).

472. BOILEAU, Richard A. *Effects of a nine-week physical conditioning program upon the body composition of obese and lean individuals.* Ph.D. in Physical Education, 1969. 105 p. (E. R. Buskirk)

Young adult male Ss whose body fatness ranged from 9.8% to 46.4% were classified into 2 groups: 8 were obese and 15 were lean. Initially physical performance and body composition measures were taken to assess the control status of each S. Body composition measures included anthropometric, densiometric, and hydrometric analyses. The endurance type of physical conditioning program, which was designed to elevate the daily caloric expenditure by 500 to 600 kcal, was conducted 1 hour/day, 5 days/week for 9 weeks. The physical conditioning program was sufficient to improve physical performance and alter body composition similarly in Ss of both groups. Body composition changes during the conditioning period resulted in a loss of body fat and a gain in fat-free weight in both groups. The obese group decreased significantly in body weight. Body density increased and skinfold thickness decreased in both groups. Plasma volume and total blood volume exhibited only slight and inconsistent changes within each group. The relative increments in total body water and intracellular water were significant, while the extracellular water changes were nonsignificant. The hydrometric analysis supported the anthropometric and densiometric analyses.

473. BURGER William R. *The comparative effects of three levels of noise on free throw shooting in basketball.* M.Ed. in Physical Education, 1969. 54 p. (E. A. Gross)

The effects of 3 intensity levels (75, 85, and 95 decibels) of crowd noise on the free throw shooting accuracy of college varsity basketball players were determined. Ss were 13 members of the 1968-69 PSU basketball team. Source of the crowd noise was a magnetic tape recording of part of a commercial sound effects record. Each of the 3 conditions of crowd noise was presented 6 times during the 6-week experiment. S shot 50 free throws 2 at a time on each of 18 days. ANOVA indicated no significant differences in free throw shooting accuracy as a result of the effects of 3 intensity levels of noise. With many Ss the noise caused a decrease in free throw shooting accuracy; with others, however, an increase in performance was observed. This unpredictable effect was also reflected in the fact that only the best and worst foul shooters retained their rank order under all 3 conditions of noise.

474. CROW, Sharon Lee. *The relationship of tennis skill to the ability to spatially orient oneself to a moving object.* M.Ed. in Physical Education, 1969. 61 p. (L. I. Magnusson)

The accuracy with which 13 high-skilled, 22 intermediate, and 27 low-skilled women tennis players could judge the flight of a ball and move to a position where they expected the ball to bounce was compared. High-skilled tennis players were tested during the first week of the 4-week experimental period; the intermediate players were tested during the second week; and the low-skilled players were tested during the third and fourth weeks. S had 3 test sessions which were scheduled on an every-other-day basis. Reliability coefficients showed the test-retest reliabilities to range from .99 to .83 for the 3 groups on the 2 variables of depth judgment ability and lateral judgment ability. A 2-way ANOVA showed no significant interaction between depth and lateral judgment ability and tennis playing ability. Analysis did show a significant difference between the total group's lateral deviation mean when compared to the total group's depth deviation mean. An absolute deviation score was determined for each S by using the Pythagorean theorem, and among-group differences were analyzed with a single ANOVA, indicating no significant differences among groups.

475. DEVENZIO, Carol R. *Effects of two training programs on vertical jumping ability.* M.Ed. in Physical Education, 1969. 62 p. (H. M. Lundegren)

College women (N=66) enrolled in 3 beginning basketball classes were tested for back and leg strength on a dynamometer with a harness attachment, and for vertical jumping ability through the use of a variation of the Sargent Vertical Jump Test. Testing was conducted prior to and after a 5-week training program which was designed to determine the effects of 2 strength training methods on vertical jumping ability. The training methods were isometric training on a shoulder bar apparatus, and isotonic weight training. ANOVA indicated that none of the 3 groups, isometric, isotonic, or control, was significantly different initially in either variable. At the conclusion no significant differences among the groups in back and leg strength were noted as a result of the 2 training programs. However, vertical jumping ability of the isometric group was significantly different from that of the control group ($P < .05$). No significant differences were found for within-group differences.

476. DOLAN, James L. *A cinematographical analysis of selected javelin throwers.* M.Ed. in Physical Education, 1969. 79 p. (C. A. Morehouse)

The purpose of this study was to ascertain, through cinematographical analysis, if selected mechanical factors during the final approach were associated with the distance of the javelin throw. A homogeneous group of 4 Ss was filmed during competition, and the best 3 throws by each S were selected for analysis of certain mechanical factors. The flight angle of the javelin at the point of release was of critical importance in obtaining longer distances. The mechanical factors of the javelin thrower (amount of fluctuation of the body center of gravity, amount of fluctuation in velocity of the body, angles of inclination of the javelin, lengths of cross-steps, and velocity of the javelin during the throw) throughout the final approach up to the point of release of the javelin seemed to be of secondary importance in relation to the distance the javelin travelled.

477. EISENBRAUN, Robert G. *An analysis of intramural touch football injuries at the Pennsylvania State University during the fall term, 1968.* M.Ed. in Physical Education, 1969. 44 p. (E. A. Gross)

The number and kinds of injuries sustained by all participants in the intramural touch football program at PSU during the fall term, 1968, were investigated. There were 4,791 Ss who participated in touch football, and they experienced 16,882 exposures. Data were collected in the following 2 ways: accidents requiring treatment on the field were recorded by the intramural supervisor on that field area, and records of intramural touch football injuries were also kept by the staff at the university health center. Data were analyzed as to number, type, and severity of injuries, and how the injuries occurred. Data were then presented to a panel comprised of members of the intramural staff and physicians at the university health center. The panel implied that the number of injuries (149) was not excessive for the number of participants and exposures. Data further revealed that sprains were the most common type of injury, followed by bruises and cuts. These 3 types of injuries comprised approximately 75% of all injuries. Twenty-two of the reported 149 injuries were classified as serious injuries.

478. GAGNON, Micheline. *The biomechanics of the sprint start.* M.S. in Physical Education, 1969. 103 p. (R. C. Nelson)

Cinematographic techniques were used to investigate the effects of variations in the starting positions of 4 sprinters. The 6 starting positions were produced by varying the distances between blocks, and the starting line and front block. Factors studied included times at 2.5 and 6 yd., and selected biomechanical factors measured during the first 4 strides. Results indicated that variations in the starting position affected the performance of the first stride but not subsequent strides. Location of the center of gravity in the set position was the factor most closely related to the achievement of the fastest time to cover 6 yd. This was determined primarily by a shorter distance between the starting line and front block and to a lesser extent by a shorter distance between blocks.

479. GIGUERE, Gilles L. *An investigation of the relationships between types of urban open spaces and selected ecological variables within an urban environment.* M.S. in Recreation and Parks, 1969. 195 p. (B. van der Smissen)

This investigation was conducted in the City of Ottawa, Ontario, Canada. Fifty census tracts were used as analytical units and data were recorded on 44 open space variables and 36 ecological characteristics. Statistical analysis included 3 phases: a principal components analysis, performed on each of the 2 data matrices to generate a smaller number of factor variables accounting for the greatest regularities in the spatial patterning of the original data; a canonical correlation, used to determine the extent to which the components of each data set were covarying spatially with one another on a city-wide basis; and 2 methods, multiple regression and mean factor score, utilized to study the environmental constituents of 16 micro-urban environments established on the basis of two major ecological referents: population and social area analysis. It was concluded that it is possible to simplify an urban environment by reducing a mass of informa-

tion to an economical description based on the patterns of occurrence of the original measurements over a set of observations, and to get more meaningful results it was necessary to use a smaller geographical analytical unit of measurement than the census tract to compare recreational site supplies and clientele.

480. HOLP, Richard A. *The effectiveness of sex education instruction at Central Dauphin High School, Harrisburg, Pennsylvania.* M.Ed. in Physical Education, 1969. 96 p. (E. A. Gross)

In order to determine the effectiveness of sex education instruction at Central Dauphin High School, a valid knowledge test had to be formulated. In 1967, a preliminary sex knowledge test of 160 multiple choice questions was administered to 580 sophomore students for formulating and validating the test. During the 1967-68 school year, 426 sophomore students were given the revised sex knowledge test to determine whether or not a unit of instruction in sex education was of any value in providing knowledge on the subject. A 6-week program of instruction in sex education improved the sex knowledge of sophomore students, both boys and girls; some apparent learning in sex education took place in the boys' control group; sophomores who participated in a formal sex education program improved their knowledge to a greater extent than those students who had no formal instruction and who acquired their sex knowledge through incidental learning; and a valid knowledge test for sophomore students was formulated in sex education.

481. HORTON, C. Brian. *The specificity of heart rate response patterns to activity and training in two different muscle groups.* M.S. in Physical Education, 1969. 75 p. (B. H. Massey)

One group (N=11) conditioned the upper body musculature through swimming, while the second group (N=11) conditioned the lower body musculature through handball and running. Both training programs were of 6-week duration. The 2 groups were compared with respect to changes in heart rate response during the following standardized submaximal work tests of arm cranking and of leg cycling, each of which was performed on a Monark friction ergometer. The findings were that both groups displayed significant decreases in heart rate response to both tests, and there was no difference between groups in the changes in heart rate on either test. This may indicate that improvement in circulatory fitness is a central rather than peripheral phenomenon.

482. KOMI, Paavo V. *Effect of eccentric and concentric muscle conditioning on tension and electrical activity of human muscle.* Ph.D. in Physical Education, 1969. 95 p. (E. R. Buskirk)

Ten Ss served as controls and the rest were assigned to either an eccentric (N=11) or concentric (N=10) group. Experimental Ss went through a 7-week muscle conditioning program in which they exerted either maximum eccentric or concentric contractions of their right forearm flexors 6 times daily 4 times a week. The average conditioning tension for the eccentric group was 40% greater than that of the concentric group. Several measurements were performed on each S before, during, and after the conditioning period. These included muscle tension and integrated EMG in maximal eccentric and concentric contractions, and in submaximal (10%-90%) and

maximal isometric contractions. The eccentric conditioning significantly increased isometric, eccentric, and concentric tension. The concentric conditioning significantly increased only eccentric and concentric tension. On the average, the eccentric conditioning increased muscle strength more than the concentric conditioning. In all groups the relationship between EMG and isometric tension was significantly nonlinear (parabolic) during the preconditioning tests. During conditioning the regression line became more linear, although no significant change was observed in EMG per unit tension. The muscle tension was highly dependent on muscle length, but the EMG stayed relatively constant over the entire movement range.

483. LAWTHER, George. *Estimation of underwater residual volume from related measures.* Ph.D. in Physical Education, 1969. 81 p. (E. R. Buskirk)

Single and multiple regression analyses were carried out in order to determine the accuracy of estimates of underwater residual volume, obtained at the time of underwater weighing, from 23 independent variables. Anthropometric measures, geometric estimates of chest volume, various dynamic lung function values, residual volume measured in air and estimated from X-rays, age, height, weight, and body surface area were included among the independent variables. Three groups of Ss were designated as the older group, younger group, and test group. The latter group was not involved in the regression analysis, but was used to test regression equations derived for the younger group. A number of regression equations were derived for both the older and younger groups. Most of these had fairly large standard errors of estimate. It was concluded that precise estimates of body density and fatness necessitate the measurement of residual volume at the time of underwater weighing.

484. LESS, Menahem. *The relationships between arm length and mass and selected kinematic and kinetic variables.* Ph.D. in Physical Education, 1969. 122 p. (R. C. Nelson)

Relationships between arm length and mass, and linear and angular velocities, angular acceleration, power, angular momentum, and kinetic energy were investigated at selected angles of a horizontal adductive arm movement with and without external loads. Stroboscopic-photographic techniques were used to determine basic angles and time data which were utilized in the calculations of the kinematic and kinetic variables of 103 male volunteer Ss. Results indicated that the production of rapid angular movement was associated primarily with strength rather than limb length or mass. Linear velocity was moderately related to arm length. Individual differences in length were more decisive than individual differences in mass, strength, or angular velocity in the achievement of high linear velocity scores. The development of high levels of performance in the kinetic variables of power, angular momentum, and kinetic energy was primarily associated with moment of inertia of the limb. Individual differences in arm length were more crucial than individual differences in arm mass in the determination of moment of inertia.

485. MCCURRY, Frederick A. *A comparison of dynamic balance performances of deaf and normal college men.* M.S. in Physical Education, 1969. 79 p. (C. A. Morehouse)

Criterion tests included 3 standard dynamic balance tests: the balance beam test, the Bass test, and the sideward leap test. The Bass test and the sideward leap test were modified slightly for the deaf Ss. Ss included 52 students from PSU and 53 students from Gallaudet College for the Deaf in Washington, D.C. At both schools Ss were divided into 2 groups — athletes or nonathletes — depending upon the information gathered from their questionnaires. Testing procedures at both schools were identical. There appeared to be a difference between dynamic balance abilities of deaf athletes and nonathletes; however, this was not true of the normal Ss. Reliability of the tests used in the study was high. Little or no relationship between deaf persons' hearing losses and their previous athletic participation existed. A moderate relationship existed among the various balance test performances for hearing Ss and for deaf nonathletes. There was little relationship, however, among the test performances for the deaf athletes.

486. McMANUS, Bruce M. *An energy cost comparison of positive and negative work for lean and obese middle-aged males.* M.S. in Physical Education, 1969. 108 p. (J. S. Skinner)

Twenty male university employees, aged 42 to 60 years, walked uphill and downhill on a treadmill. Nine men were obese (over 23% body fat) and 11 were lean (under 10% body fat). Ss walked at a rate of 3 mph beginning at a grade of −10%. Every 4 minutes the treadmill grade was increased by 2.5% until the elevation reached +10%, for a total testing time of 36 min. Heart rate was recorded during the last min. of walking at each grade. Expired volume readings were recorded from a gasometer and separate collections of expired air were made during the 3rd and 4th min. at each grade. Metabolic requirements for all levels of negative work (−10% to −2.5% grade) were constant, but increased significantly with increasing intensity of positive work (+2.5% to +10% grade). At all levels of work, obese Ss had a significantly higher energy expenditure [$\dot{V}O_2$(L/min)], but a lower expenditure when differences in body size were accounted for [$\dot{V}O_2$(ml/kg/min)]. When composition of the body weight was considered, however, obese Ss had a higher energy expenditure [$\dot{V}O_2$(ml/kg of lean body mass/min)]. Thus, it appears that excess adipose tissue can be a handicap while walking uphill and downhill.

487. MEACCI, William. *The supportive effects of adhesive strappings on the knee joint before and after exercise.* M.Ed. in Physical Education, 1969. 46 p. (C. A. Morehouse)

The knees of 27 athletes were evaluated in order to ascertain the supportive effects of 2 methods of knee strappings. The measuring instrument was a specially designed apparatus for evaluating lateral knee stability. Evaluations were obtained before taping, immediately after taping, and after a 5-min. exercise period. Ss were tested on 2 different days; one day cloth and elastic tape were used and the next day only elastic tape was applied. The results were the same for both strapping methods;

significant support was found immediately after taping, but there was no apparent support remaining in either abduction or adduction after 5 min. of standardized exercises.

488. OSTERHOUDT, Robert G. *A cinematographic analysis of selected aspects of the running stride of experienced track athletes at various speeds and on different slopes.* M.S. in Physical Education, 1969. 109 p. (R. C. Nelson)

The manner in which selected mechanical aspects of the running stride were altered with accompanying variations in the speed of run and the slope upon which the running occurs was determined. Sixteen intercollegiate runners were filmed, and subsequently analyzed, while twice running on a horizontal surface, uphill on a 10% slope, and downhill on a 10% slope at the constant velocities of 11, 16, and 21 ft./sec. ANOVA indicated that the variation in most elements of the running stride under scrutiny due to the main effects of slope, speed, and individual was statistically significant ($P < .05$). It was also apparent that the effects of slope and speed did not exercise a uniform influence upon individuals.

489. PEINIGER, Maribeth. *A cinematographical analysis of women high jumpers.* M.Ed. in Physical Education, 1969. 42 p. (R. C. Nelson)

Four experienced female track and field club members served as Ss to determine the differences in the biomechanics of fair and good high jumpers. Two jumps of each S were filmed and analyzed to provide quantification of the running, transfer, and take-off velocities, angles and angular velocity of the kicking leg, path of the center of gravity, and selected time variables. It was concluded that the biomechanical factors selected for study did not differentiate between fair and good women high jumpers.

490. PERRY, Ellen L. *An investigation of field hockey skills tests for college women.* M.Ed. in Physical Education, 1969. 69 p. (H. M. Lundegren)

Two previously established field hockey skills tests were modified and administered during 2 successive class meetings to 115 college women. Each S was then rated by 3 judges while playing the position of her choice in a game. The score earned on the skills test was correlated with a criterion score derived from the judges' ratings to yield a validity coefficient. The test-retest reliability coefficient for the Modified Schmithals-French Ball Control Test was .70 and the validity coefficient was .64. The test-retest reliability coefficient for the Modified Stewart Wall Rebound Test was .78 and the validity coefficient was .71. The Modified Stewart Wall Rebound Test was the more acceptable test according to statistical analysis.

491. RANDALL, R. Kirk. *The effects of circuit training on running the half mile.* M.Ed. in Physical Education, 1969. 56 p. (E. A. Gross)

Students were distributed among 3 groups: one group (N=30) used interval running only; a 2nd group (N=30) had circuit training in addition to interval running training; and a 3rd group (N=20) acted as the control. The training programs were designed to improve the ability of Ss to run a half

mile by improving their conditioning and teaching a sense of pace. The interval running program was identical for both experimental groups and was progressive in nature. The circuit training program included a battery of 8 exercises, with the objective of completing a circuit (consisting of 3 complete sets of the exercises) in less time during each training session. The control group had instruction in badminton. The experiment was conducted over an 8-week period, including the pretraining, pretraining testing, and post-training testing. The training program lasted 7 weeks, each week consisting of 3 75-min. sessions, conducted on alternate days. The interval running group and the circuit training group were significantly faster than the control group; no significant difference was found between the interval running group and the circuit training group.

492. REESE, Elwood L. *A proposed intramural athletic program for boys, grades nine through twelve, at the Huntingdon Area High School, Huntingdon, Pennsylvania.* M.Ed. in Physical Education, 1969. 171 p. (E. A. Gross)

This study was conducted on the basis of a recommendation made in 1965 by an evaluating committee representing the Commission on Secondary Schools of the Middle States Association of Colleges and Secondary Schools. The following 5 steps were used in formulating the proposed intramural athletic program of this study: survey of related literature regarding intramural programs in public schools, survey of intramural literature regarding authoritative opinions and criteria, measurement of student interest in intramural activities through the use of a questionnaire, establishment of evaluative criteria relating to the organizational factors of intramural athletic program development, and proposal of an intramural athletic program for boys in grades 9–12 of the Huntingdon Area High School. The proposed intramural athletic program was established on the basis of the authoritative criteria regarding intramural athletic program development, the results of the intramural questionnaire, and the facilities available for intramural activities at Huntingdon.

493. STARK, Lois. *The role of the university administration in the development of physical education and athletics at the Pennsylvania State University, 1855–1930.* M.S. in Physical Education, 1969. 83 p. (B.H. Massey)

Publications of Pennsylvania State College and national, state, and local newspapers served as an index to the critical issues influencing the founding of the School of Physical Education and Athletics. Presidential reports, minutes of the trustees, faculty senate minutes, athletic records, and personal papers of the college presidents composed the primary source material. The administration of Pennsylvania State College played a significant role in the establishment of the School of Physical Education and Athletics only as a legislative body. Until 1927, trustees and presidents merely complied with alumni requests for faculty and facilities. In 1927, college president Ralph Dorn Hetzel became the key exponent in the struggle to correct the athletic situation. Yet, it was the alumni, who desired winning teams at any cost, that motivated the trustees to establish the School of Physical Education and Athletics. The establishment of the school was a result of administrative and alumni interaction.

494. STOFKO, John M. *A comparison of hook and straight ball bowling for beginning bowlers.* M.Ed. in Physical Education, 1969. 39 p. (J. Skinner)

One group of 24 male college Ss (Group S-H) was randomly assigned to the straight ball delivery and then halfway through the experimental period they were converted to the hook ball delivery. The remaining 24 Ss (Group H) were assigned the hook ball delivery for the entire length of the study. Group S-H made significant improvement only while using the hook ball delivery in the last half of the study. Group H made significant improvement in bowling scores for the first 33 games bowled but for the last 11 games their scores remained about the same. Group S-H started and ended at the same level of achievement as did Group H. Contrary to what experts and researchers have said about teaching beginners the straight ball delivery, it was concluded that the hook ball delivery should be taught to beginning bowlers immediately.

495. STONER, Clarence H. *The effects of participation in beginning swimming, wrestling, and physical conditioning classes on the level of motor fitness of male students at the Pennsylvania State University.* M.Ed. in Physical Education, 1969. 73 p. (E. A. Gross)

Ss (N=123) from various classes of beginning swimming, wrestling, and physical conditioning were compared for improvement in motor fitness using the JCR plus Sit-ups Test Battery. Ss were tested prior to any activity, after 5 weeks of activity, and after 9 weeks of activity. Participation in 9 weeks of all 3 programs improved the motor fitness of male college students. This improvement was shown over a 5-week period and continued over an additional 4-week period. Over the 9-week period, students in physical conditioning classes improved their motor fitness to a greater extent than students in either wrestling or swimming classes. Participation in wrestling improved motor fitness to a greater extent than participation in swimming.

496. TAIT, George Thomas. *Exercise performance in man breathing selected mixtures of nitrogen-oxygen and helium-oxygen.* Ph.D. in Physical Education, 1969. 94 p. (E. R. Buskirk)

Four track runners were exercised to exhaustion on a treadmill while breathing one of 7 gases: air, 21% O_2 in helium, 60% O_2 in nitrogen, 60% O_2 in helium, 80% O_2 in nitrogen, 80% O_2 in helium, or 100% O_2. Exercise and recovery variables studied included: heart rate, respiratory rate, ventilatory minute volume, oxygen consumption, oxygen pulse, tidal volume, inspired minus expired oxygen contents, ventilation equivalent, and maximal run time. Breathing the least dense gas (21% O_2 in helium) resulted in the highest ventilatory volumes but oxygen consumptions equivalent to those obtained while breathing air; the indication was that the oxygen consumption—per unit volume of air respired—bears a direct, positive relationship to the density of the gas breathed and to the intensity of the exercise. Comparison of the 4 non-helium gases indicated that efficiencies of the endurance-related variables studied were improved with high O_2 percentage in the inspired air, but that there is an optimal level of O_2 enrichment, lying somewhere between 60% and 100% O_2, above which value further enrichment will result in a decrease in efficiency of those same variables.

497. TAYLOR, Hoyt E. *The status of men's intramural sports programs in certain selected southern Negro colleges.* M.Ed. in Physical Education, 1969. 69 p. (R. J. Scannell)

The major purpose of this study was to formulate recommendations for possible improvement of the intramural sports programs of the 17 colleges of the Southern Intercollegiate Athletic Conference. The normative survey method, employing both the mailed questionnaire and the interview techniques, was used in collecting data. Of the 13 colleges (with enrollments ranging from 613 to 3,731 students) that returned questionnaires, 2 colleges had no intramural programs. Lack of space and financial support were the 2 main reasons for hindering the growth and extension of intramural programs in the majority of the colleges. Eleven recommendations were made for improving the programs.

498. TIBURZI, Antoinette. *The effect of fencing on agility and muscular endurance.* M.Ed. in Physical Education, 1969. 61 p. (H. M. Lundegren)

Sixty-six college women enrolled in either of 2 beginning fencing classes or 2 health classes in the required PE program were tested for muscular endurance of the legs and for agility, using 4 selected tests. The Edgren Side Step Test and the Scott and French Shuttle Run were used as measurements of agility, and the successive number of leg lifts and the successive number of squat thrusts that could be performed until exhaustion, using a designated cadence, were used as measurements of muscular endurance of the legs. Testing was conducted at the beginning and completion of a 5-week program of fencing, for the experimental group, or health, for the control group. The control group did not participate in any planned activity program. The groups did not statistically differ from each other either initially or at the end of the experiment. Within-group differences showed significant ($P < .05$) gains in scores of all tests for the control group, and in the endurance items for the experimental group.

499. TYLER, Robert W. *Lateral dominance as a factor in learning selected motor skills.* Ph.D. in Physical Education, 1969. 123 p. (B. H. Massey)

Ss were classified by tests of eye, hand, and foot dominance into 3 different groups. One group was right dominant in eye, hand, and foot (N=23). A second group was left dominant in eye, but right dominant in hand and foot (N=19). The third group showed some lack of dominance in one or more of the 3 body parts (N=18). The groups practiced 3 motor skills 3 days per week for 6 weeks. Each of the skills was divided into 3 parts which included performance with the right hand, left hand, and both hands. All groups showed significant learning of the 3 motor skills. There was no difference among the groups in rate of improvement. The right dominant group performed better than the mixed dominant group on all 3 skills when using either the right hand or both hands. Any differences among groups were diminished after a period of practice. It was concluded that individuals displaying different dominance patterns, as defined in this study, are equally capable of learning selected new motor skills.

500. WELLS, Christine L. *The relationships of selected body temperatures to sweating rates overlying active and nonactive muscle tissue.* Ph.D. in Physical Education, 1969. 160 p. (E. R. Buskirk)

Relationships among regional sweating rates (SR), skin temperatures (T_s), subcutaneous temperatures (T_{sub}), and 3 core temperatures were examined to evaluate the possibility that a local heating effect resulting from exercise enhances sweat secretion. Two lean and 2 obese female Ss performed contralateral arm-leg exercises representing 25% and 50% of their maximum oxygen consumption. Two environmental temperatures were selected to vary external heat stress. Core temperatures, T_{sub}, and SR increased with the work level performed. Skin temperatures were related to the ambient temperatures, but decreased with higher work load performance. Active limb T_s, T_{sub}, and SR exceeded nonactive limb values. Mean arm T_{sub} exceeded mean leg T_{sub}, but mean leg SR values were greater than arm values. Positive relationships were reported between limb SR and T_s, T_{sub}, T_{sub}-T_s, and core temperatures. Because different relationships were found between SR and T_s, and SR and T_{sub}-T_s for each work level performed, the concept of sudomotor regulation moderated by thermal receptors located at various depths in the skin was ruled out. The most reasonable afferent control signal seemed to be one originating from receptors located within or near muscle tissue. It was concluded that a local heating effect resulting from muscle contraction enhanced localized sweat secretion.

501. WHEELER, Donald L. *The feasibility of offering a physical education program via educational television for elementary schools in the Central Pennsylvania area.* M.Ed. in Physical Education, 1969. 76 p. (E. A. Gross)

Of 2,083 questionnaires sent to elementary school classroom teachers in the 192 elementary schools serviced by WPSX-TV, 1,428 (68%) were completed and returned. Of 192 questionnaires sent to the principals of the participating elementary schools, 148 (77%) were completed and returned. A frequency analysis of the data revealed that 1,193, or 87%, of the classroom teachers thought that an organized PE program should be offered in the elementary school. A majority of the respondents, 798 or 72%, indicated that they would utilize a televised PE program if it were offered. A majority of the classroom teachers, 1,113 or 81%, indicated that they would be able to view a televised PE program as an individual class.

502. WILLIAMS, Larry R. *An analysis of the recreational pursuits of selected parolees from the State Correctional Institution at Rockview, Pennsylvania.* M.Ed. in Recreation, 1989. 59 p. (B. van der Smissen)

Twenty parolees from the Rockview Correctional Institution residing in 2 parole districts, a rural area and an urban area, were interviewed by the investigator. Prison and post-release recreation choices were passive, sedentary activities, while pre-institutional recreation had a strong outdoor recreation emphasis. Prior recreational skill had the most influence on prison and post-release recreation pursuits, while there was no difference between rural and urban parolee recreation patterns. Pre-release guidance and community contact following release on recreation oppor-

tunities in the communities were almost nonexistent. Although sports dominate organized recreation in the prison, parolee recreation pursuits were passive and sedentary. Prison and parolee recreation patterns reflected the parolee's concept and skill developed prior to imprisonment. The carry-over value of prison recreation is not as strong as the carry-over value of pre-prison recreation pursuits. Community leaders need to establish a better liaison with the prison to meet more effectively the recreational needs of the parolee.

Purdue University, Lafayette, Indiana (C. J. Widule)

503. BEYMAN, Berta Roslyn. *Movement concept, self-estimation, and performance of a gross motor task.* M.S., 1969. 53 p. (M. Clifton)

The purpose of this study was to investigate the relationships among movement-concept, self-estimate, and performance of a gross motor task. Thirty female Ss enrolled in the third grade and ranging in age from 8.6 years to 9.6 years were tested on a valance measure to ascertain the value they attributed to specified concepts about physical activities. These concepts formed the basis for the movement-concept Q-sort test. A self-estimate score based on expectancy of performance on a specified motor task was elicited. The motor task consisted of an obstacle course which Ss ran and on which they were timed. Knowledge of results was supplied by informing them of their actual time score, which was based on the same scale as the self-estimate measure. One week later, the same Ss were tested on the tests in the following order: self-estimate, motor task, and movement-concept Q-sort. The reliability for the movement-concept Q-sort was found to be .62 for 23 Ss participating in this phase of the study. A 2 × 3 ANOVA design of sessions and instruments was made.

504. COTTON, Patricia. *Instructions given by different voice intensities and frequencies and gross motor performance.* M.S., 1969. 53 p. (H. M. Smith)

Investigated were the effects on the performance of a gross motor task by instructions preceding that task, given at varying intensities and frequencies of vocal sound. Twenty-eight 9-year-old girls participated. Taped instructions were given to randomly assigned groups as follows: high intensity, normal frequency; low intensity, normal frequency; high frequency, normal intensity; low frequency, normal intensity; and normal frequency, normal intensity. Analysis of co-variance indicated no differences in performance between treatment groups.

505. GARRETT, Gladys Evans. *Methodology for assessing movement individuality: A computerized approach.* Ph.D., 1970. 109 p. (C. J. Widule)

Various computerized methods for assessing differences in movement behavior were developed and presented. These include: center of gravity analysis, kinetic energy analysis, modeling procedures, graphic display techniques, and simulation. The graphic and tabular results of the

computer output include such information as: linear and angular velocities, the kinetic energies of the body segments, and the percent contribution of the body segments to the total kinetic energy of the body.

506. HART, Barbara A. *Comparison of actual and self-estimated body width of seven-year-old boys under static and dynamic conditions.* M.S., 1969. 53 p. (H. M. Smith)

Investigated were self-estimates of shoulder width under static and dynamic conditions, the degree of difference between those estimates and actual shoulder width, and the relationship of lateral sway in walking to the difference in estimates made under static and dynamic conditions. Twenty-seven Ss were tested. Self-estimates under both static and dynamic conditions were significantly greater than shoulder width. No significant differences were found to exist between estimates made under static and dynamic conditions. An r of .03 indicated no significant relationship between measured body sway and estimates made under static and dynamic conditions.

507. OGLESBY, Carole A. *Influence of perceived aspects of parental and peer expectancies, warmth, and authority, on self-identification as active and competent movement performers.* Ph.D., 1969. 178 p. (H. M. Smith)

Investigated was the influence of certain perceived aspects of parental and peer relationships on the self-identification of kindergarten, fourth, and tenth grade girls (N=111) as active and competent movement performers. Hypotheses tested were: (1) when parental expectancies agree, consistency of child response is obtained; (2) when parental expectancies disagree, the child will model after the warm parent; (3) when both parents are perceived warm the child models after the like sex parent; (4) when neither parent is perceived warm, the child models after the more powerful parent; and (5) when parental expectancies disagree the child follows the model whose expectancies agree with peers. Questionnaire and tape-recorded interviews were used to collect data. ANOVA and correlation techniques were employed. Hypotheses 2, 3, 4, and 5 were accepted.

Sacramento State College, Sacramento, California (D. R. Mohr)

508. AMAD, Omar Sheik. *A study of physicians' choice of ten laboratory procedures adaptable to automation.* M.A. in Health Education, 1969. 100 p. (F. B. Benell)

The dual purpose study investigated the extent of individual laboratory automation (N=7) in the Sacramento area; and surveyed practicing physicians of the Sacramento area to determine those 10 laboratory procedures (adaptable to automation) they felt were most useful in the diagnosis of incipient disease in the apparently healthy adult. Automation in the individual laboratories appears to be limited. Several laboratories send some of their specimens to other laboratories in the area for analysis. A majority of the preferred laboratory procedures chosen by the physicians were

biochemical procedures. Of the 72 procedures chosen by the physicians, the ones of the highest rank were those adaptable to automation.

509. BEETON, Carole A. *Olympic Games philately.* M.A. in Physical Education, 1969. 240 p. (M. A. Rousey)

Three specific purposes were to produce a single reference with a comprehensive list of all Olympic Games stamps, annotated to identify and describe the unique characteristics of each stamp; to identify selected historical facts and discover trends in the development of Olympic Games philately; and to create a selected bibliography for Olympic Games philately. The scope of this study was limited to the coverage of Summer and Winter Olympic Games stamps. A special Olympic Games stamp category included stamps issued in connection with the Olympic Games, but not in honor or in commemoration of a specific Olympiad. The scope of this study was further limited to describing, classifying, tabulating, and analyzing specific stamp data with the intention of interpreting the meaning, but without any attempt to include value judgments or philosophical aspects of Olympic Games stamps.

510. BELL, Priscilla M. *Sex education and attitude change.* M.A. in Health Education, 1969. (F. B. Benell)

Purposes were to learn whether a brief sex education unit would benefit students; to gather information relative to student knowledge of the reproductive system; to gather information concerning student knowledge of venereal disease; and to evaluate change in student attitude after being taught a sex education unit. Ss were seventh and eighth grade students of an intermediate school. Knowledge of the reproductive system and of venereal diseases can be learned by seventh and eighth grade students in a brief sex education unit. It may be inferred from the data that attitudes are statistically related to the knowledge of the reproductive system and of venereal diseases.

511. BOWLES, Marvin S. *A manual for the effective use of visual aids in a high school football program.* M.A. in Physical Education, 1969. 103 p. (A. A. Bates)

The general problem of the study was to develop a visual education manual for the use of SHS football coaches who were interested in extending visual teaching methods in their learning problems. Some of the specific problems were to review the literature to discover how visual aids could be used as effective teaching tools and to list and describe the use of teaching aids that would improve instruction. A survey of reference materials in the fields of psychology and physical education was made. Research indicated that the person learns by training sensory organs to perceive cues that cause automatic reactions to stimuli. Insight was found to be important in triggering additional motor response. Early motor learning was believed to be essentially under visual control; therefore, the use of visual aids had primary meaning in the orientation of the learner. Research did not indicate visual materials and presentations to be constantly superior to audio types of aids.

512. CANCLINI, Davis James. *A comparison of simple reaction time between winners and losers of the 1966 Sac-Joaquin South Sub-Section Wrestling Tournament.* M.A. in Physical Education, 1969. 42 p. (F. B. Jones)

Simple reaction times of winners and losers in the 1966 Sac-Joaquin South Sub-Section Wrestling Tournament were compared to determine the relationship between the simple reaction time of a wrestler's preferred hand and wrestling success. SHS wrestlers (N=100) who qualified for the 1966 tournament reacted to the Dekan Athletic Performance Analyzer with their preferred hand. The fastest response of 3 trials was used. Simple reaction time of the preferred hand was not a deciding factor in wrestling success.

513. DAVIS, Glenn Scion. *An investigation of the existing relationships between socioeconomic status of parents and the physical fitness scores of their fifth grade pupils, Sacramento City Unified School District, 1967.* M.A. in Physical Education, 1969. 76 p. (A. A. Bates)

Purposes of the study were to identify each child's physical fitness level and socioeconomic level and to determine their relationship; and to identify factors at each socioeconomic and physical fitness level which contributed to the child's physical fitness. Fifth grade children, 114 boys and 107 girls, were given the California Physical Performance Test. A questionnaire was then completed by the parents (N=87). Data were then compared to the social and physical level of the child to identify factors which contributed to physical fitness. No social level contributed to total physical fitness more than other social levels. Certain factors were found in the background of physically able children and in social levels; where the factors were identical the social class contributed to physical fitness.

514. DAVIES, Marlin Hopkins, Jr. *A cinematographic analysis comparing two selected styles of place kicking.* M.A. in Physical Education, 1969. 120 p. (F. B. Jones)

Purposes were to analyze kicking, and to determine the fundamental patterns which may result in power, accuracy, and the angle of flight of the football in place kicking. Slow motion films were taken. In order to impart the maximum force to the football, the kicking foot must be rotated around a second axis and the football must be kicked by as great a portion of the foot as possible. The force generated by each body segment must be added to the total action at the peak of the force of the attached proximal segment. In order to attain the greatest angle of flight, the football must be contacted below its center of gravity. The football will rise at a greater angle if the portion of the foot striking the ball is moving upward at the time of contact. The direction of a football in flight will partially depend on the manner in which the projectile is rotating. In the European soccer style place kick, a greater potential for force and distance exists, and the ball has a lower angle of flight, which increases the possibility of the ball being deflected by the defense.

515. FERENCIK, David Richard. *A comparison of a physical strength index to tests of motor educability for primary grades.* M.A. in Physical Education, 1969. 57 p. (F. B. Jones)

A physical strength index composed of age, height, and grip strength was compared to tests of motor educability in primary grade children (N=30). It was concluded that strength was not a significant factor in the motor educability of primary grade children.

516. FLAKE, William Lee. *A validated circuit training program for high school wrestlers.* M.A. in Physical Education, 1969. 36 p. (F. B. Jones)

SHS wrestlers (N=52) were divided into 2 equal groups: one group participated in a 15-station circuit training program; the other participated in the basic wrestler's exercise program. Both groups trained for 8 weeks. Challenge matches were used to evaluate the circuit training program. Each wrestler had 8 challenge matches in his own weight class with wrestlers from the opposite training program. The circuit training program was not superior to the basic wrestler's exercise program.

517. GREGORY, LeRoy L. *The development of a recreation program for patients residing in convalescent hospitals.* M.A. in Recreation, 1969. 171 p. (S. Kammeyer)

The writer surveyed recreation programs in 22 selected proprietary convalescent hospitals in northern California, talking with administrators and staff personnel to ascertain existing programs and administration organization. Major source of data was a questionnaire. The survey showed that, collectively speaking, many activities were being conducted at the hospitals, but when broken down hospital by hospital, there was very little variation in the individual programs. In attempting to assess the activities which the patients liked best and least, the respondents, including the administrators and the recreation leaders, were asked to list 4 activities in the first category and 2 in the second. Patients liked musical activities first, parties second, Bingo third, crafts fourth, and movies fifth. In the least liked category detailed crafts rated first, complicated games second, puzzles third, while sewing ranked fourth, and card games rated in the fifth position.

518. GUADAGNOLO, Frank Bernard. *An analysis of personality inventories as identifiers of leadership ability among California Youth Authority wards.* M.A. in Recreation Management, 1969. 75 p. (S. Kammeyer)

The study attempted to ascertain whether the California Psychological Inventory and the Personality Rating Scale could identify significant personality traits among above-average leaders and/or below-average leaders. Leadership and job performance evaluations were administered in order to identify the above-average and below-average leaders. Leadership and job performance evaluations of the delinquents were obtained from each boy's social worker, teacher, and counselor. The California Psychological Inventory test results indicated that 4 personality characteristics were significant between the above-average and below-average leaders. The peer ratings and self-ratings of the Personality Rating Scale identified 5 significant common personality traits.

519. INCHAUSTI, Michael Louis, Jr. *The participation in school athletics by delinquent boys.* M.A. in Physical Education, 1969. 63 p. (F. B. Jones)
The extent to which delinquent boys (N=190) at the Karl Holton School for Boys in Stockton, California, participated in interscholastic athletics before they were arrested was determined. The boys ranged in age from 14 to 21 years, and were from throughout the state. They had had many problems in attending school which prevented them from participating successfully in interscholastic athletic programs.

520. KESSLER, Irene B. *Folk, square, and round dancing in Sacramento, California, as taught in secondary schools compared to adult recreational club activities.* M.A. in Physical Education, 1969. 127 p. (D. R. Mohr)
A questionnaire was sent to 69 schools located in Sacramento and the surrounding areas. Sources of data regarding the adult recreational dance clubs were interviews with teachers and callers of the 2 movements and observation of club activities. The responding secondary schools devoted on the average 40% of their dance programs to modern, folk, and square dances; however, square dance programs were predominantly traditional. There were twice as many total class sessions devoted to instruction in folk dance as to instruction in square dance, grades 9 to 12. SHS instruction regarding round dancing as practiced in the square dance movement amounted to a total of only 4 dances. Within the recreational folk dance movement, 80% of the dances programed for Saturday parties were classified as modern, 15% as traditional. Within the square and round dance movement, 79% of the step patterns used at the Saturday parties were classified as strictly modern. The square and round dance movement has 8 times as many adherents as the folk dance movement and gave 5 times as many Saturday parties. There were approximately 500 folk dancers and 4,000 square dancers.

521. KIESEWETTER, Amelia E. *Health instruction as it relates to the health interests and attitudes of Sacramento college students.* M.A. in Health Science, 1969. 78 p. (J. E. Hansma)
Literature relative to health education and interrelated disciplines was reviewed. Questionnaires designed for this research were employed to elicit the health interests and attitudes of Sacramento college students (N=300) aged 18 to 25 years, and to reveal the methods of teaching which the 5 participating instructors had used. Student interests and attitudes changed during a college health education course. It was suggested that teaching techniques were an influential factor in enhancing the students' interests and attitudes toward the discipline of health education.

522. NORMAN, Kristine Lee. *A comparative film analysis of the interrelationship of American dance forms.* M.A. in Physical Education, 1969. 67 p. (D. R. Mohr)
This film analysis pointed out the relationships that exist between contemporary American ballet and modern dance forms, using as examples for comparison selected portions of the choreography in Herbert Ross' "Caprichios," and Martha Graham's "A Dancer's World." An analytical

study and comparisons of selected portions of the choreography in these 2 films were made in order to show that contemporary American ballet has incorporated modern dance movements and that modern dance has, in turn, utilized classical principles and forms. Sources of data were the 2 above-mentioned films; review of related literature; and 4 interviews of experts in the field. There are similarities in the 4 basic elements of choreography. Many themes used in ballet today have been borrowed from the modern dancer's approach, and the technique of the ballet as a theatrical art form is being borrowed by the modern dancer, until today it is difficult to distinguish between the 2 forms.

523. OPP, Robert L. *The effects of a preseason conditioning program and a season of varsity water polo on physical work capacity, anthropometric measurements, and respiratory capacity.* M.A. in Physical Education, 1969. 78 p. (I. E. Faria)

Experimental Ss were 15 water polo players at Sacramento State College who engaged in only water polo from the beginning of the preseason conditioning program until the end of the varsity season. The control group consisted of 10 volunteer students from 4 golf classes who participated in no physical activity other than the golf classes. Two independent variables, preseason and a season of training, and 28 dependent variables were employed. The physiological stress induced on the water polo Ss during the preseason conditioning program was too difficult for their initial state, as evidenced by the slight decrease in physical work capacity, breath-holding ability, and vital capacity. However, it brought about little change in diastolic, systolic, and pulse pressures, 10 of the 14 skinfold measurements, and all of the girth measurements. The season of water polo competition had little effect on physical work capacity, breath-holding ability, vital capacity, diastolic, systolic, and pulse pressures, girth measurements, and on 13 of the 14 skinfold measurements. When the mean gain scores of the water polo Ss were compared to the control group, it was found that the physiological stress of water polo was more effective in bringing about a significant change in body composition; and the physiological stress of water had little effect on aerobic capacity.

524. PAYAN, Jess M. *The effects of an eight-week preseason weight training conditioning program on athletic injuries during the 1967 football season at Terra Linda High School, California.* M.A. in Physical Education, 1969. 74 p. (A. A. Bates)

SHS Ss formed an experimental group which weight trained and the control group, which did not. Major sources of data were physical body measurements taken before and after the 8-week experimental period, a record pertaining to the seriousness and type of athletic injury incurred, and a record of player participation time in terms of practice hours and game quarters during the football season. The merits of the weight training program for the prevention of athletic injury could be materially enhanced if conducted as a continuous program throughout the school year. The effect of the weight training program on growth in physical body measurements could be significantly increased with an extended training period. Optimum incidence and seriousness of injury to the shoulders, knees, and

ankles could be reduced by specificity and intensification of weight training to those areas.

525. SCANAVINO, Kenneth Victor. *A survey of football player attitudes.* M.A. in Physical Education, 1969. 145 p. (F. B. Jones)

Ss were SHS football players with 2 complete years of playing experience. Only players from one of the 6 SHSs in the Golden Empire Athletic League were eligible to participate. Ss responded to a questionnaire containing statements relating to 5 areas of investigation: attitudes toward coaches; attitudes toward practices; attitudes toward training; attitudes toward winning and losing; and attitudes toward their self-role in the game of football. Football players' attitudes could be measured and they had definite attitudes toward the game of football. The valance of attitudes from players at one school may differ from the attitudes of players in another school. Attitudes represented a tendency to act which might affect the players' performance. The football coach, teammates, and fellow students play a major role in the formation, modification, and changing of player attitudes through their association and interaction with the players.

526. SCHWILK, Sandra Ellen. *A detailed study of the laws dealing with obtaining licensure to practice as registered nurses in the fifty states of the United States.* M.A. in Health Education, 1969. 100 p. (F. B. Bennell)

The literature dealing with interstate-licensure for registered nurses, the Nurse Practice Acts of each state and of the District of Columbia were reviewed. A composite of the state requirements for licensure was made. A questionnaire was prepared and sent to each State Board of Nurse Examiners requesting participation in a mobility study of registered nurses. Personal interviews were utilized. There is a need for more uniformity in nursing licensure requirements among the states in this country. This change would afford the graduate nurse who moves from one state to another less difficulty in obtaining her license to practice as a registered nurse in her new residence; a nurse moving to a state whose licensure requirements are equivalent to other states can obtain her license more readily. If there were uniform laws as far as the State Board Test Pool Examination is concerned, the minimum passing score of the test would be uniform throughout the United States and thereby eliminate many interstate licensure problems for the nurses. The findings imply that further research is needed to discover the ways to acquire uniform state licensure laws in the United States for registered nurses.

527. TRESTRAIL, Joan Rapisarda. *Prevalence of sex misconceptions and reluctance to teach controversial sex related topics among teachers, school nurses, and undergraduate students enrolled in a course in sex education.* M.A. in Health Education, 1969. 85 p. (F. B. Bennell)

The examinees were tested by the Bennell Inquiry Form at the completion of their one-unit symposium. The inquiry form consisted of 135 true-false items sampling the biological and sociopsychological aspects of sex, and a 15-item list of controversial sex related topics. Conclusions reached: There is a need for professional preparation of future teachers in the area

of health education including sex education, and for in-service training of experienced teachers. Courses in health education for teachers should be designed to alleviate common sex misconceptions. Colleges and universities need to require such courses as part of teacher preparation curriculums. The effect of such a course was shown when the scores of the examinees in this study were compared with the scores of the examinees in the Benell study.

528. WESTOVER, Gordon W. *A survey of recommendations and practices by twenty-three junior high schools relative to motivational stimuli for boys in physical education.* M.A. in Physical Education, 1969. 98 p. (A. A. Bates)

The experiences that helped to improve the interest level of the boys with respect to physical activity were analyzed. Identification of the following (through a questionnaire sent to selected JHS PE teachers) was sought: teacher qualities, motivating incentives and devices, student leadership opportunities, kinds of penalties, favorite activities, types of awards and recognition, and teaching methods. Essential to effective teaching is a genuine concern for the individual, coupled with good control or discipline of the group. Enthusiasm of the instructor, individual encouragement, and student involvement through leadership and followership opportunities are essential to satisfactory motivation of students. Student interest could be heightened, thus assuring greater learning, if greater teacher efforts were directed toward PE clubs, libraries, coeducational activities, and special classes.

529. ZELLMER, Gloria O'Nora. *The relationship of the frequency of serving a food item to its acceptability in the diet.* M.A. in Health Education, 1969. 163 p. (J. E. Hansma)

Major source of data was a series of questionnaires based on a test-retest design, with a stratified population of 20 elements, patients and personnel of the Scenic General Hospital, Modesto, California. Questionnaire responses were made using a 9-point hedonic scale, and were indicated immediately at the time of testing or eating the item being tested. The experimental cycle consisted of serving each of the 46 test items (entrees, vegetables, and fruits) 3 times within 7 days, keeping menu combinations and other variables constant. Each time a food item was rated for acceptance, factors such as mood, health, appetite, and acknowledged item familiarity were also rated. Additional recorded factors of age, sex, length of hospital stay, and education seemed to have an influence on acceptance, but as a function of the specific food item rather than the food class. The least degree of fatigue was experienced in fruit and vegetable categories. Plain entrees were less fatiguing than mixtures. Pork was more fatiguing than beef or poultry. Eighty-three % of the food items declined in acceptability with increased service.

San Jose State College, San Jose, California (J. S. Bosco)

530. AIRINGTON, Michael D. *A comparative study of shot put training and weight training as methods of increasing strength and shot put distance in three pairs of identical twins.* M.A. in Physical Education, 1968. 62 p. (J. S. Bosco)

Three pairs of male twins with at least one year of SHS shot-putting experience were divided randomly into a weight training group and a shot put training group. After an 8-week training period, the shot put training group had not improved significantly in strength or shot put distance. Ss in the weight training group increased significantly on only one strength measure (elbow extension), but improved significantly in shot put distance over their counterparts, even though they had not trained with the shot for the entire 8-week period.

531. BATCHELDER, Jackson E. *A proposed plan for introducing six-man football into the physical education curriculum.* M.A. in Physical Education, 1969. (C. Walker)

532. HOY, H. Thomas. *A study of the potential for increasing activity time for physical education through flexible scheduling and the effects of flexible scheduling on physical fitness as measured by three phases of the physical performance test for California.* M.A. in Physical Education, 1968. 102 p. (W. J. McPherson)

Determined was whether flexible scheduling lessens available instructional time and/or lowers physical fitness performance levels. A summary of time-phase allocations indicated that, on the average, an equal amount of PE activity time is available within the flexible schedules now practiced in California if compared to a school practicing traditional scheduling of daily 50-min. periods. A comparison of physical performance scores indicated that students in flexibly scheduled programs performed better than those in traditionally scheduled programs.

533. LESO, Ambrose F. *A study to determine the effects of karate exercises on the strength of the muscles of the hip, knee, and ankle joints.* M.A. in Physical Education, 1968. 20 p. (C. W. Jennett)

Twenty male SHS students were tested for hip, knee, and ankle strength. Following the test, one-half of the group took daily exercises in basic karate kicks while the other one-half participated in regular PE warm-up drills. At the end of 6 weeks both groups were retested. Practice of basic karate kicks did not improve strength.

534. PAPACHRISTOS, Zacharias. *The external mechanics of eight selected single-leg takedowns in amateur wrestling.* M.A. in Physical Education, 1969. 51 p. (W. F. Gustafson)

Filmed sequences of 8 selected single-leg takedowns were analyzed in terms of the external mechanics involved in their execution. The analyses were divided into 2 columns. The left-hand column described the action sequence; the right-hand column identified the mechanical principle which described how or why the action was undertaken. Compari-

sons were made between each of the analyses and textbook descriptions of the same or similar takedowns.

535. RHODE, Leonard E. *The relationship of personality factors to participation in age-group tackle football.* M.A. in Physical Education, 1969. 50 p. (J. Menendez)

Differences in personality between Ss (N=182) who were successful in making the Youth League football teams for which they competed, and those Ss (N=136) who failed to make the teams were determined. Cattell's High School Personality Questionnaire provided a measurement of 14 independent personality variables. Results of *t*-tests on the 14 variables indicated that the Ss who were successful in making the teams for which they were competing were significantly more intelligent and tough-minded than Ss who failed to make the teams.

536. SHELLMAN, Guy F. H. *Applying a self-rating personality test to interscholastic soccer.* M.A. in Physical Education, 1969. 65 p. (J. Menendez)

Thirty-eight soccer team members were tested preseason and post-season to determine if there were significant differences between good and poor soccer players as a result of participation. The Athletic Personality Inventory was used, with a self-opinion rating scale of the same traits given prior to both testing sessions. Although there were no significant preseason differences, the varsity team was significantly higher than the reserves in the traits of self-confidence, emotional stability, and dominance after the competitive season.

537. VOLTA, Lee S. *A comparison of high school athletes and nonathletes in general physical education knowledge.* M.A. in Physical Education, 1968. 41 p. (J. S. Bosco)

SHS boys were divided into 3 groups: 33 athletes who had never been excused from the regular PE program; 35 athletes who had been excused from the regular PE program; and 84 nonathletes who had never been excused from the regular PE program. No difference was found when comparing all groups in the tennis knowledge test, the swimming knowledge test, and the health knowledge test. The null hypothesis was rejected when comparing nonathletes with excused athletes and nonathletes with unexcused athletes in the softball knowledge test, with the difference occurring in the direction of better softball knowledge among the athletes.

Smith College, Northampton, Massachusetts (E. E. Way)

538. AUSTIN, Susan Diane. *The relationship of modern dance performance to strength, coordination, and kinesthetic perception.* M.S. in Physical Education, 1969. 71 p. (E. E. Way)

Fifty-five Ss were given a grip dynamometer test, the Bass Dynamic Balance Test, and Young's Positioning Test. Three judges rated ability to perform a set technique study. The judges were reliable and consistent. No significant relationships appeared.

539. BATES, Barbara Claire. *The growth of dance in the American musical theater.* M.S. in Physical Education, 1969. 148 p. (E. E. Way)

A historical survey was made of musical theater from "The Beggar's Opera" through the revues to a tentative evaluation of the 1960's.

540. BURLING, Judith Wilmot. *A comparison of the attitudes toward physical education in two Eastern colleges.* M.S. in Physical Education, 1969. 80 p. (E. E. Way)

A comparison was made between freshman women in a coeducational institution and in a women's college. Schools were chosen to minimize differences in socioeconomic backgrounds, relative school size, and regionality. An adaptation of Moore's Background Questionnaire and the Wear Attitude Inventory were used. The majority of students indicated favorable or highly favorable attitudes toward PE. There were no significant differences in general scores; however, those from the coeducational school had a significantly higher mean on social values than those from the women's college, and significantly higher means on general and physical health values.

541. GALLEMORE, Sandra L. *The emergence of the dance division of the American Association for Health, Physical Education, and Recreation.* M.S. in Physical Education, 1969. 337 p. (E. E. Way)

The place of the dance in the national association from the "Dancing Calisthenics" on the 1901 convention program through the organization of the Dance Division was studied. Included are implications of the possible AAHPER reorganization.

542. HIGGIN, Janet P. *A study of the factors related to teacher drop-out among female physical education teachers.* M.S. in Physical Education, 1969. 77 p. (E. E. Way)

Graduates of the last 10 years from 3 Eastern colleges and universities were studied. Significant differences were found between the drop-out group and those continuing to teach in relation to career involvement, student attitude, colleague attitude, administrators' educational philosophy, teacher evaluation, community attitude, policy-making power, facility sharing arrangements, and budgetary allotments.

543. POSTHUMUS, Sherry Rose. *An investigation of the relationship between attitudes toward sports and dance and kinesthetic perception.* M.S. in Physical Education, 1969. 92 p. (E. E. Way)

Ss (N=72) were tested for judgment of weight, forward arm extension, width, and force. Performances were reliable to the degree that they showed direction of estimation error. College women tended to reduce kinesthetic stimuli in judgment of weight, forward arm extension, and force, and had a tendency to augment stimuli in judgment of width. It is questionable whether reduction and augmentation of kinesthetic perception are factors in attitudes toward contact and noncontact forms of sports and dance.

544. SANFORD, Barbara E. *The administrative climate of women's physical education departments in Eastern colleges and universities.* M.S. in Physical Education, 1969. (E. E. Way)

The majority of the colleges associated with EAPECW were small, private colleges that did not offer a professional PE program. The small colleges offered fewer extracurricular activities but this was primarily due to fewer instructional personnel and budget restrictions. The small college faculties were not as adequately paid as those in the large colleges, but the small colleges did not require as much paperwork and tended to have a more personal atmosphere.

545. STENDER, Joann L. *A study of differences in kinesthetic perception related to limb positioning in two environments.* M.S. in Physical Education, 1969. 88 p. (E. E. Way)

Primarily concerned with limb positioning in a gravity, nonpressure environment and in a nongravity, pressure environment, the author also investigated duplication of force and width. College women (N=42) were Ss. There were significant differences in the accuracy of positioning and width judgment in the 2 environments. The direction of error indicated overestimation on land in all tests involving the arms.

546. YEAMANS, Lynne R. *The relationship of physiological stress and visual perception.* M.S. in Physical Education, 1969. 50 p. (E. E. Way)

Physiological stress was measured by heart rate after a step test, and visual perception by the time required to identify a predetermined set of geometric forms. Form I of the visual perception test was given before a 3-min. step test; Form II, immediately following the stress. A mean heart rate of 175 indicated the achievement of stress levels.

South Dakota State University, Brookings, South Dakota

(P. Brynteson)

547. BOOHER, James M. *Effects of rest, abdominal ice packs, and ice water foot baths in improving the recovery process.* M.S. in Physical Education, 1969. 53 p. (G. E. Robinson)

Fifteen volunteer male college Ss were tested 3 times during a 3-week period. The order in which Ss participated in the treatments was randomly assigned. Testing period consisted of riding a bicycle ergometer with the resistance on the ergometer initially set at 2 kg. This load was increased ½ kg each min. thereafter until S's heart rate reached 180 beats min., followed by a 12-min. recovery period in which one of the 3 treatments was applied. Then a second bicycle ergometer ride identical to the first was taken. There was a decrease in the second bout of exercise for all treatments, but the abdominal ice pack appeared to be the best method to help improve the recovery process.

548 BUSCH, Gary A. *The effects of weight training program upon selected pole vaulting skills.* M.S. in Physical Education, 1969. 37 p. (G. E. Robinson)
Thirty volunteer male college freshmen were equated into 2 groups using the converted scores of the free running speed test, pole carry speed tests, and pole carry speed and plant accuracy test. The experimental group participated in an 8-week weight training program consisting of 5 lifts: arm curls, military presses, heel raisers, leg presses, and dead lifts. Initial and final tests were administered to both groups to determine the effect of the weight training program upon free running speed, pole carry speed with 2 varying hand height grips, and pole carry speed and plant accuracy. The weight training program did not significantly decrease free running speed, pole carry speed, and pole carry speed and plant accuracy. In the free running speed test between the experimental and control groups, the results indicated a significant decrease in free running speed by the control group. On all other criterion measures there was no significant decrease in performance.

549. BUSCH, Judy G. *A normative study of the AAHPER Youth Fitness Test for girls in grades seven through ten in the State of South Dakota.* M.S. in Physical Education, 1969. 59 p. (G. E. Robinson)
One school was selected to represent each region or section of the South Dakota High School Activities' Association. The number selected from each school was in proportion to the school's enrollment. The AAHPER Youth Fitness Test was administered to 1,000 South Dakota girls in grades 7 through 10. Norms were established by computing every fifth percentile. The scores of South Dakota girls were compared with those of national girls, using age only. The medians of South Dakota girls were then compared with the medians of the national girls on each test item. The medians for South Dakota girls were higher than those for national girls on all items except the flexed-arm hang. The scores of South Dakota girls tended to show improvement as age increased whereas the scores for national girls tended to level off or drop.

550. DIRKSEN, Jay E. *The current attitudes of South Dakota State University full-time undergraduate students toward basic course requirements.* M.S. in Physical Education, 1969. 79 p. (G. E. Robinson)
Students (N=486) were selected according to sex, college, and class by using the stratified random sample method. Eighty-three % of the students completed questionnaires. Eighty-five % of these Ss felt that there are subject areas where there should be basic course requirements for graduation with the B.A. degree, and 90% indicated a corresponding response for the B.S. degree. English, speech, and PE, which are required for graduation, received a majority of positive responses for both the B.A. and B.S. degrees. Data were further analyzed by sex, class, college, cumulative grade point average, and degree being pursued. Results of the survey imply that the present English, PE, and speech requirements for graduation are justified as indicated by the majority of positive responses received.

551. HANSON, Donald J. *The married high school athlete in South Dakota: His status and information for formulating a fair policy.* M.S. in Physical Education, 1969. 97 p. (G. E. Robinson)

The survey method utilizing the questionnaire was employed in determining status. Ninety-nine % of the administrators of SHSs in South Dakota returned a questionnaire supplying information concerning the status of the married athletes in their respective schools. Results of the survey indicated that 43% of the schools have a policy that prohibits the married athlete from participation in interscholastic athletics. Seventeen % of the schools have a policy that permits the married athlete to participate, and 40% have no policy concerning the married athlete.

552. HANSEN, Leslie C. *The effects of three selected weight training programs on muscular strength, endurance, girth, and cardiovascular endurance.* M.S. in Physical Education, 1969. 68 p. (G. E. Robinson)

Thirty freshman and varsity football players from the 1968 South Dakota State University football teams were randomly divided into 3 groups. One group used a modification of the DeLorme-Watkins method of training; the second group followed the traditional strength training method, while the third followed a circuit training program. Training covered a period of 7 weeks, 3 times a week. Tests for muscular strength, endurance, and girth were administered before the program began, at the end of 3 weeks of training, and at the conclusion of the training program, All groups significantly improved on all the parameters and there was no significant difference between the groups.

553. KURTENBACH, Frank J. *The Hall method of estimating healthy classification as compared to the current method employed by the South Dakota High School Activities Association.* M.S. in Physical Education, 1969. 72 p. (P. Brynteson)

The purpose of this study was to utilize Hall's method of anthropometric measurements on a select sample and to compare the results of Hall's method with the current procedure of establishing minimum weights. Ss included wrestlers competing in 4 of 8 district tournaments during the 1969 state tournament series. Five body measurements were taken from each competitor: height, chest width, chest depth, width at the iliac crests, and thigh circumference. These raw data were converted to predicted minimum weight by using a regression equation developed by Hall. With the use of tables, predicted weight was compared with the wrestler's current certified and his wrestling weight. The analysis revealed that Hall's method, with some adjustment, could be used as a guide to establishing certified weight for wrestlers.

554. LINDSKOV, Lucille F. *The effects of two varying distributions of practice sessions on the improvement of long jump performance of women.* M.S. in Physical Education, 1969. 46 p. (G. E. Robinson)

College freshman women (N=22) were divided into 2 equated groups by scores obtained on a standing long jump test, a 50-yd. dash test, and the Iowa Brace Motor Educability Test. Group I practiced twice a week and jumped 10 times at each practice session. Group II met 4 times a week and jumped 5 times at each practice session for 4 weeks. Tests were

administered 2 weeks and 4 weeks following the beginning of the study. No significant difference was found within the group means for Group I, but Group II showed statistical improvement over Group I with regard to the mean difference in the changes between groups from Tests 1 to 2.

555. LUITJENS, Larry L. *Leg strength and vertical jump of basketball players as affected by two selected exercise programs conducted throughout the competitive season.* M.S. in Physical Education, 1969. 44 p. (G. E. Robinson)

Members (N=22) of the De Smet High School basketball squad were divided into 2 equated groups, according to results in the Sargent Jump Test. Group A participated in a 12-week weight training program, consisting of 3 circuits of 2 exercises, 3 times per week. Group B trained with the Exer-Genie in a similar manner for 12 weeks. Ss were tested on leg strength and explosive power before the training, every 3 weeks during the training, and one and 2 weeks after the conclusion of the training period. No significant difference in performance was found between groups but there was a significant increase in both leg strength and explosive power within each group.

556. OLSON, Lloyd C. *Instant feedback via video tape and its effect on the learning of a selected side horse routine.* M.S. in Physical Education, 1969. 40 p. (G. E. Robinson)

Male freshman college students (N=24) were placed into 2 groups equated by their motor educability and shoulder girdle strength scores. Ss in the 2 groups were novice gymnasts and participated in a 3-week training program during which they met 4 times a week for 50 min. Both groups were taught by the traditional method. The experimental group also used video tape with immediate knowledge of results as a teaching aid. At the end of the training period Ss were judged on their performance of the selected side horse routine by 4 experienced gymnastics judges. The judges used the rating scale described in the NCAA gymnastics rule book. A *t* test indicated no significant difference ($P > .01$) between the groups.

557. PIERSON, John D. *The effects of cryotherapy on the velocity of a pitched baseball.* M.S. in Physical Education, 1969. 35 p. (G. E. Robinson)

This study investigated the feasibility of a cold water application of 35 F to 40 F between innings, and its effect on the pitching arm through the course of a designated series of throws. Eight male students from the basic PE classes at South Dakota State University participated over a period of 3 weeks. Ss were administered each of 3 selected treatments. The cold water treatment between innings caused a significant decrease in the velocity of the pitched baseball as determined by tests conducted after innings 1 and 2, and after innings 8 and 9.

558. PORTER, Anthony J. *The velocity of a pitched baseball as affected by two varying training programs.* M.S. in Physical Education, 1969. 56 p. (G. E. Robinson)

By employing a running program versus leg weight exercises, an analysis of the 2 training methods and their effects on the throwing endurance of the

pitcher and on the velocity of the pitched ball was made in an attempt to assist in determining future coaching practices. The test measuring the velocity of the pitched ball and the test measuring leg strength were administered prior to and after the 6-week training program. The mean gain or loss difference between the initial and final tests within the 3 experimental groups and within the control group was treated statistically with the *t* ratio.

559. RASMUSSEN, Glen L. *A normative study of the AAHPER Youth Fitness Test for boys in grades seven through ten in the State of South Dakota.* M.S. in Physical Education, 1969. 67 p. (G. E. Robinson)

One school was selected to represent each region or section of the South Dakota High School Activities Association. The number selected from each school was in proportion to the school's enrollment. The AAHPER Youth Fitness Test was administered to 1,000 South Dakota boys in grades 7 through 10. Norms were established by computing every fifth percentile. The scores of South Dakota boys were compared with those of national boys using age only. The medians of South Dakota boys were then compared with the medians of national boys on each test item. The medians for South Dakota boys at all ages were higher than those for national boys on all items except the pull-up, the shuttle run, and the 50-yd. dash.

560. SCHOOLMEESTER, Vernon L. *A history of intercollegiate basketball at South Dakota State University.* M.S. in Physical Education, 1969. 121 p. (G. E. Robinson)

The years 1905–1969 of intercollegiate basketball at South Dakota State University were investigated. Basketball competition was first started at the college in 1905 with the playing of a single game. The scheduling of games was limited by travel, and games were played in poor facilities. The caliber of basketball improved as the number of participants increased sufficiently to permit the hiring of qualified coaches. The formation of a conference brought about new rules and regulations. Scheduling of games was made several years in advance, and there was significant upgrading of the schedule in the area of nonconference games. Financial aid was introduced to help the student athletes obtain an education. Facilities and equipment were constantly improved to provide for an improved caliber of basketball.

561. SMITH, Richard C., Jr. *The effects of selected drills upon the improvement of agility.* M.S. in Physical Education, 1969. 95 p. (G. E. Robinson)

Male college freshmen (N = 49) from 5 basic PE classes were placed into 5 groups. Four of the groups were randomly assigned experimental treatments consisting of recommended agility drills, while the fifth group was randomly selected to serve as the control group. The 4 experimental groups participated in a 7-week training program during which they met 3 times per week for 5-min. treatments. The McCauliff Agility Components Test was administered on 3 predesignated occasions. Certain agility drills were better in developing agility than others.

562. STRAIN, David F. *Predicting future high school basketball player success as measured by estimated varsity game point production from individual sophomore game statistics.* M.S. in Physical Education, 1969. 51 p. (G. E. Robinson)

During the years 1961 through 1968, 30 juniors and 21 seniors of the Rapid City High School basketball varsity teams, who had completed the sophomore, junior, and senior basketball season, furnished the data for the formularization of 3 predictive equations from the relationship of individual sophomore game statistics and varsity point production. In the development of the multiple regression equations, 5 predictor variables, successful free throw average per game, field goal percentage, and rebound percentage were correlated with the success variable as measured by varsity point production.

563. WURSTER, Sherri L. J. *The scientific authenticity of the Dvorak evaluation test of fundamental locomotor movement for beginners in modern dance.* M.S. in Physical Education, 1969. 58 p. (G. E. Robinson)

From 3 Midwest institutions, 153 modern dance beginners performed the 6-item locomotor skill test devised by Dvorak. Ss (N=153) were tested in groups of 2 while being subjectively evaluated by judges (N=19) using a 5-point rating scale. The same test was administered to each group twice, with a 2-day interval between the test-retest periods. Data were subjected to ANOVA and analyzed in the following 3 groups: experienced judges, additional judges, and a combination of the 2. The correlation was computed for day-to-day variation of scores for each test item and individual test item means were calculated. The Dvorak subjective evaluation of fundamental locomotor movement discriminated significantly ($P < .01$) between students. All test items were fairly reliable for group use, ranging from .68 to .77. Norms were established for each item. The test could not be scored objectively by the judges.

564. YEAGER, Susan A. *The effects of varying training time periods on the development of cardiovascular efficiency in college women.* M.S. in Physical Education, 1969. 53 p. (G. E. Robinson)

Eighteen volunteers were randomly divided into 3 groups, and the treatments were then randomly assigned for a 6-week conditioning period followed by a 3-week deconditioning period. Ss were tested before and after the conditioning period to determine the effects of the programs on cardiovascular efficiency. A third test was administered 3 weeks after the second test to measure the level of retention of fitness. The 2 tests administered each time were the Åstrand Test of Predicted Maximal Oxygen Uptake and a test of physical work capacity. During the conditioning program, Ss rode the bicycle ergometer 3 times per week. Group A exercised 10 min. per session, Group B for 20 min., and Group C for 30 min. each session. All groups significantly improved in cardiovascular efficiency between Test I and Test II, and retained this level throughout the deconditioning phase of the study. No significant differences were found between groups.

Southeast Missouri State College, Cape Girardeau, Missouri
(R. F. Kirby)

565. BRIDELL, Gary E. *A comparison of selected static and dynamic stretching exercises on the flexibility of the hip joint.* M.A., 1969. 51 p. (R. F. Kirby)
College men (N=92) were measured for hip flexibility before and after a 9-week training program. Ss were divided into 4 exercise groups: static stretching, dynamic stretching, combination stretching, and control group. Each group performed a series of 5 exercises. In comparing the means of the pretest and post-test, no significant difference was found among groups. Significant gains in flexibility were recorded in all groups except the controls. ANOVA showed no significant gains among the groups.

566. LOWRY, Calvin C. *Comparative performance of educable mentally retarded on the Kraus-Weber test.* M.A., 1969. 47 p. (J. Schneider)
The Kraus-Weber Test of Minimum Muscular Fitness was administered to 50 educable mentally retarded elementary school children. Ss were male and female students, both white and Negro, aged 7-12 years. Of the 6 testing items, flexibility was the only test with a significant difference between white and Negro. When compared to other studies using this test, there seemed to be a lesser difference on performances between educable mentally retarded and trainable mentally retarded than between the educable mentally retarded groups and normal groups. Sex did not appear to be a factor in performance differences in the educable mentally retarded Ss. On the strength items there tended to be a lower percentage of performance failures by older students. However, they had an increase in failures on the flexibility items.

567. PARDON, Charles D. *A study of the effects of a perceptual-motor activities program on dynamic balance of educable mentally retarded.* M.A., 1969. 55 p. (J. E. Schneider)
Boys and girls (N=120) were chosen from 3 levels of special education classes from each of 3 elementary schools. To measure performance in dynamic balance, the Purdue Perceptual-Motor Survey was administered. Ss were placed in 3 groups: observation, control, and experimental. Groups in level 3 showed a significant difference ($P < .05$).

568. RICHEY, Gary L. *A survey of recreational programs offered in state institutions for the mentally retarded in the Midwestern states during the year 1968-1969.* M.A., 1969. 63 p. (K. G. Tillman)
Institutions for the mentally retarded in Missouri, Illinois, Wisconsin, Minnesota, Iowa, Kansas, Nebraska, South Dakota, and North Dakota were surveyed. A questionnaire contained a listing of 32 outdoor recreational activities, 32 indoor recreational activities, 10 organized groups and clubs, and 2 short-answer questions pertaining to holiday programs and types of field trips sponsored by recreational departments. Each of these areas was divided into 3 groupings: educable, trainable, and custodial. The questionnaire was mailed to the recreational directors of 35 state mental institutions

and the investigator received 34 replies. There was a wide variety of recreational activities offered at the state institutions for the mentally retarded. The programs were geared more toward the educable and trainable than the custodial.

University of Southern California, Los Angeles, California
(H. A. deVries)

569. ARMSTRONG, Bonnie. *Spirit whirling: A dance production.* M.A. in Physical Education, 1969. 46 p. (L. Ellfeldt)

570. BONDI, Don Brady. *Dialog: A choreographic exploration of words and movement.* M.A. in Physical Education, 1969. 42 p. (L. Ellfeldt)

571. EL-SAYED, Tahany A. *Criteria for personnel policies for organized camping in Egypt.* Ph.D. in Physical Education, 1969. 189 p. (L. C. Smith)

Two instruments were developed. The first consisted of 150 items categorized in 3 parts and was evaluated by a selected number of American camp directors. The resulting data became the basis of the second instrument with 91 items evaluated by a jury of Egyptian experts. There was a general agreement among the American camp directors concerning desirable criteria for selection, training, and evaluation of camp counselors. There was a general agreement among the jury members concerning the desirability of the tentative list of criteria for selection, training, and evaluation of camp counselors in Egypt. The responses of the Egyptian jury members, in general, were in agreement with the responses of the American camp directors. It was concluded that a formulation of recommended personnel policies in organized camping in the U.S. provided useful guide lines in the formulation of personnel policies for organized camping in Egypt.

572. HUTTON, Robert S. *The retroactive effect of strenuous and exhaustive exercise on maze task learning.* Ph.D. in Physical Education, 1969. 143 p. (A. Lockhart)

After 9 days of pretraining on a treadmill task, 51 young albino rats, Sprague-Dawley strain, were randomly distributed into 3 groups. All animals were given 2 successive trials (trial blocks) every other day, where they were to walk through a multiple-U, 6-unit, shallow water maze. Each animal received a total of 6 trial blocks. One min. after the maze task, Groups B and C exercised 5 min. and 90 min. (or until exhausted), respectively. Group A did not receive the exercise treatment. Error scores based on entries of the animal into a blind alley and time scores based on the time it took an animal to travel from the first choice point to the escape platform were the parameters measured. For error scores, a significant F ratio for the exercise treatment was noted. Later tests indicated that Group C differed significantly from Groups A and B, whereas Groups A and B did not differ from each other. A significant improvement

in error scores was evidenced among groups. For time scores, Groups B and C slowed markedly after approximately the third block of trials, whereas Group A progressively improved.

573. LILLICH, George Otto, Jr. *Guidelines for elementary school physical education curricula based on principles of perceptual-motor learning.* M.A. in Physical Education, 1969. 78 p. (L. Ellfeldt)

574. MARTIN, Stephen L. *Patterning and magnitude of aftereffects following kinesthetic stimulation.* Ph.D. in Physical Education, 1969. 175 p. (K.C. Lersten)

Perceptual distortions produced by kinesthetic stimulation on the tasks of judgment of thickness by finger span, heaviness of objects held in the hands, extent of arm movements away from the body, and judgment of level grade while walking on a treadmill, were studied using 51 male university students. Kinesthetic stimulation sessions were 5 sec., 90 sec., and 120 sec. Sign tests and intercorrelations between tasks and stimulation sessions revealed that Ss were not patterning in their kinesthetic aftereffects. ANOVA followed by the Scheffé test showed that perceptual distortions significantly increased as stimulation time increased in the majority of cases, with the exception of the extent of arm movement task. In no cases was a 5 sec. stimulation session sufficient time to produce a significant kinesthetic aftereffect, but a combined 90–120 sec. session was found to produce significant aftereffects on all but the arm movement task.

575. NORMAN, Edward H. *The comparison of three approaches to teaching college physical education in the shaping of attitudes toward physical activity.* Ed.D. in Higher Education, 1969. 122 p. (Pullias)

Three approaches to teaching PE were utilized for a total of 339 men and women at Biola College. The orientation approach was a laboratory experience that included lecture and discussion on the topics of basic motor skills; basic physiological functions; motor learning; and psychological, social, spiritual, and moral fitness. An activity-centered approach consisted of an instruction unit on basketball and volleyball. The combination approach included the lecture and discussion and a unit on volleyball. ANOVA indicated a significant difference between the method of presentation in the change of attitudes; Ss did perceive the stated objectives of PE in total more readily in the orientation and combination approaches than in the activity approach; Ss with previous experiences expressed as being not strongly for PE had greater mean gains than did Ss who were strongly for PE. The greatest changes resulted from the combination approach. There was no significant difference between the change in attitude of college men and that of college women toward PE resulting from any of the methods of presentation.

576. REMLEY, Mary L. *Twentieth century concepts of sports competition for women.* Ph.D. in Physical Education, 1969. 138 p. (E. Metheny)

A preliminary review of the archives of the NAPECW and the DGWS and literature written by women in PE suggested that major concepts about

sports competition developed in 3 major time periods. From a further analysis of the material in each of the time periods, 5 categories of concepts were established: concepts developed from terminology; concepts developed from recurring problems; concepts developed by individuals; concepts developed by organizations; and concepts developed from research. The study was organized around these 5 categories, and the literature pertaining to each concept was analyzed and sythesized in an attempt to determine patterns of attitudes within each of the 3 periods. Women physical educators expressed ambivalent attitudes toward sports competition for women. The relative ambivalence of these attitudes toward competition changed during the period under study. While patterns of ambivalent attitudes were identified within each of the subperiods, these patterns were not substantially different from one period to the next.

577. ROBERTSON, Jo Ann. *The effect of varying short time intervals between repetitions upon performance of a motor skill.* Ph.D. in Physical Education, 1969. 110 p. (A. Lockhart)

Ss were 25 undergraduate women with an established average of 110 or higher in bowling. The criteria used to measure performance of 2 games under the 5 experimental situations were: total pins converted by each ball, total pins converted by the first ball, and regulation game scores attained. Each S had to: bowl 4 games alone; bowl 4 games with one other participant; bowl 4 games with 2 other participants; bowl 4 games with 3 other participants; and bowl 4 games with 4 other participants. No significant difference in performance resulted from varying the time interval between repetitions, regardless of the criterion employed. Significant differences in performance among individuals were consistently found. Data indicated an inhibiting state did not occur; massed (performing alone) or distributed (performing with others) practice situation did not deter or enhance performance; performance was not affected by short-term memory, and memory trace was not a factor in altering performance. Significant differences existed between performance of the Ss. Performance of Ss varied as might be logically expected in low level performance, in an accuracy task, and among a group of 25 people.

578. SAWYER, Daniel B. *Personnel management practices in municipal park and recreation departments.* Ph.D. in Physical Education, 1968. 165 p. (J. T. Hall)

Included were 36 cities with a population of 250,000 or more. The study was conducted in 3 parts: review of the literature, descriptive survey, and another survey of personal interviews with 25 authorities across the U.S. Employment prerequisites, hiring practices, in-service training, salary schedules, promotion, demotion, classification, probation, employee manuals, and retirement were examined. There is a need for municipal park and recreation departments to upgrade their personnel management practices. The specific recommendations were: municipal park and recreation agencies should review their personnel management practices, particularly give attention to the recommendations of the authorities who participated in this study; administrators of municipal park and recreation agencies should be permitted to take sabbatical leaves in order to enhance their abilities as administrators; that the National Recreation

and Park Association organize a professional certification plan for the employment of municipal park and recreation employees; provide financial assistance to employees who wish to continue their education; and the municipal park and recreation agencies establish a written policy providing for merit raises.

579. VEICH, Marilyn Frances. *Break-up: A dance concert.* M.A. in Physical Education, 1969. 58 p. (L. Ellfeldt)

Southern Illinois University, Carbondale, Illinois (R. G. Knowlton)

580. AMES, Stephen A. *The effects of a ten-day training program on the maximal oxygen intake capacity and other related cardiorespiratory measures on six untrained college men.* M.S. in Physical Education, 1969. 80 p. (R. G. Knowlton)

Six college freshmen performed a submaximal bicycle ergometer test before and after a 10-day training program. A control S participated in the exercise tests only. The training program consisted of a series of sprints at maximal effort for a distance of 138 ft. Maximal oxygen intake capacity was predicted from pulse rate response to a submaximal work load. Oxygen intake capacity at PWC–170 was calculated by chemical and volumetric analysis using the Scholander technique. Other related measures recorded were resting, exercise, and recovery pulse rate and blood pressure, respiratory quotient, pulmonary ventilation, and total ergometric work. Predicted maximal oxygen intake capacity increased significantly after the training program due to a lower pulse rate response at a submaximal work load. Oxygen intake capacity at PWC–170, respiratory quotient, and pulmonary ventilation were not changed significantly by the training program. The training program significantly reduced the resting, exercise, and recovery pulse rates.

581. CARROLL, Hollis A. *A written program of self-instruction for learning the cartwheel in gymnastics.* M.S. in Physical Education, 1969. 253 p. (J. L. Thorpe)

A written self-instructional program for learning the cartwheel in gymnastics was constructed and evaluated by comparison with a traditional method specific to each instructor involved. The written program contained small, ordered, sequential steps in addition to diagrams for learning the cartwheel. Ss were 34 college women enrolled in 2 beginning gymnastics and tumbling classes. A pretest and post-test were administered. Ss completed a questionnaire which numerically assessed their previous experience and motivational level toward gymnastics, and also evaluated the programed method of instruction. Data were analyzed through multiple linear regression analyses. Both methods were found to be equally effective for the components tested and the time allotted for instruction. Previous experience affected scores on the post-test. Additional measures consisting of a subjective rating of the handstand and a maximum balance time administered after cartwheel instruction were adequate measures for assessing cartwheel performance.

582. ELLIS, Walter Terrell. *An exploratory study using selected physiological and psychological variables for prediction of performance in the twelve-minute run.* M.S. in Physical Education, 1969. 68 p. (R. G. Knowlton)

Nineteen measures were taken on 39 male students and placed in a multiple linear regression model. ANOVA was used to determine which predictor or combination of predictors would best determine the distance one would cover in the 12-min. run. The measures used as predictors were: maximal oxygen uptake, blood pressure, heart rate, percentage recovery from the Åstrand Bicycle Ergometer Test, reciprocal of the ponderal index, manifest anxiety, test anxiety, index of social status, neurotic anxiety, and introversion-extroversion. The most criterion variance was accounted for by the measure percentage recovery. The 2 equations which represented the best predictors were maximal oxygen uptake (liters/min.) and percentage recovery and resting heart rate and percentage recovery. No psychological variable used in the study accounted for the significant amount of criterion variance.

583. EVERTZ, Richard J. *A study of selected cardiorespiratory and blood parameters during a three-week period from competitive swimming.* M.S. in Physical Education, 1969. 68 p. (R. G. Knowlton)

Ten national level swimmers were measured following the termination of their training and peak performance. Resting and standing cardiovascular variables, ballistocardiogram, hemoglobin, hematocrit, and max. $\dot{V}O_2$ were measured during the first and third week of the detraining period. The results showed significant increases in the cardiovascular variables upon standing from the supine position. No significant changes were shown in the blood parameters, heart rate responses to a graded treadmill test, recovery heart rate and blood pressure, and max. $\dot{V}O_2$. Results indicated that the Ss' level of fitness had not changed during the studied 3-week detraining period.

584. FIERECK, Lavonne M. *Assessments of velocity for the tennis serve of college women.* M.S. in Physical Education, 1989. 79 p. (C. West)

Three methods of assessing velocity were compared and data were collected on 4 trials for 35 Ss. Determination of velocity by film analysis; measures of time, horizontal distance, and contact height; and subjective ratings were the 3 methods employed. Methods 1 and 2 served as validation criteria to determine whether the subjective ratings of velocity were valid measures of velocity for the tennis serve. Two judges rated velocity. Film analysis measures were secured on the 3 trial only. The 2 criterion methods required measures of flight time, horizontal distance, and contact height. Degree of relationship between the distance scorers, timers, and subjective raters was studied and objectivity coefficients ranged from .85 to .98. The relationship between the 3 methods was indicated by coefficients ranging from .78 to .92.

585. LITHERLAND, Barbara A. *The development of a written and audio self-instructional program for a selected folk dance.* M.S. in Education, 1969. 80 p. (C. West and J. Thorpe)

The purpose of the study was to construct a written and audio program of self-instruction to be utilized as a teaching progression for learning to perform the folk dance, "Harmonica." A secondary purpose was to compare the effectiveness of 2 methods of instruction — a traditional method with a self-instructional method. Ss were 34 college women enrolled in either a beginning folk dance class or a beginning modern dance class. An evaluation was made by utilizing the following data: oral and written comments by participants, oral and written comments by selected instructors, scores recorded by 3 independent judges, and estimates of the time required for the students taught by both methods to learn the dance. The traditional group obtained significantly higher scores than did the self-instructional group. No significant difference existed between the mean performance scores of the folk dance group and the modern dance group or in the mean times in which the groups learned the folk dance.

586. ROGERS, Virginia A. *Three methods of assessing velocity and angle of projection of the volleyball spike.* M.S. in Education, 1969. 129 p. (J. A. Thorpe)

College women students (N=59) in beginning classes of volleyball and 14 members of the women's varsity volleyball team at SIU were tested on 5 trials of the volleyball spike. Each spike was scored for distance, was timed, and was subjectively assessed for velocity (using a 10-point scale) and for angle of projection (using an independent 5-point scale). The fourth trial spike was filmed. Velocity and angle of projection of the spike were determined by the following 3 methods: the timer-distance method in which the 2 components were determined by calculation from measures of horizontal distance that the ball traveled, time of ball flight, and height of contact point; the film analysis method in which the 2 components were determined from the measures described previously; and the subjective method. The film analysis, timer-distance, and subjective methods were comparable in assessing the velocity and angle of projection of the volleyball spike (r's ranged from -.91 to .45). The timer-distance method appeared to be the most accurate of the 3 methods.

587. SCHAAKE, Larry D. *An appraisal of the problems emanating from intramural organizational structures of selected state universities in Illinois.* M.S. in Recreation Education, 1969. 94 p. (W. H. Freeburg)

Intramural directors of 8 selected state universities in Illinois were interviewed, using a prepared questionnaire-interview schedule, to collect data pertinent to problems emanating from the type of intramural organizational structure employed. Interpretation of the data, in terms of totals and percentages in table form, indicated that there were major and/or minor problem areas associated with the intramural organizational structures studied. Due to the diversity of intramural organizational structures found at the selected universities, however, no conclusion could be drawn which directly related specific intramural problem areas to the particular type of intramural organizational structure employed.

588. SCHULTZE, Jacquelyn A. *A case study of a remedial swimmer.* M.S. in Physical Education, 1969. 244 p. (J. L. Thorpe)

The purpose of the case study was to teach a remedial swimmer the necessary skills to pass the American Red Cross beginning swimming test. Secondary purposes were to determine the causes of S's previous failures by administering a series of diagnostic tests and to use the information obtained from these tests to derive specific teaching methods. S was instructed in beginning swimming 4 times a week for a period of 9½ weeks. The American Red Cross beginning swimming test was used to assess S's swimming ability prior to and after the instructional period. Tests of kinesthesis, the Scott Motor Ability test, S's health record, an appraisal by a physician and physical therapist, interviews with S and her previous instructors, S's educational profile, a movement pattern checklist, and a fear-motivation questionnaire were techniques utilized. S was able to fulfill the requirements for the American Red Cross beginning swimming test and exhibit a significant degree of learning.

589. SOMMERS, Paul Allen. *An assessment of kinesio-perceptual abilities of the mentally retarded.* M.S. in Physical Education, 1969. 61 p. (L. E. Holt and J. J. Wilkinson)

Data were collected through administration of the Holt-Joiner Kinesio-Perceptual Test Battery. Children (N=120), classified by state specification as mentally retarded but not having severe neuromuscular or emotional problems, were selected at random at the A. L. Bowen Center, Harrisburg, Illinois. The sample included boys and girls, aged 8–24, with IQ's of 30 to 88. The prediction of IQ and mental retardation classification by the test items was computed. It was found that 67% of the variance in the criterion of IQ was accounted for by the test items. An *F* ratio test shows that the percent of predicted criterion variance was significant ($P < .001$). The prediction of mental retardation classification was not significant. In regard to the correlation matrix, it was found that the more intelligent the S, the greater level of positive correlation obtained with the kinesio-perceptual items of the test.

590. SUTTON, Alvin I. *The ballistocardiographic prediction of cardio-respiratory responses to measured exercise.* M.S. in Physical Education, 1969. 84 p. (R. G. Knowlton)

Ballistocardiograms and electrocardiograms were simultaneously taken on 64 male college students. A multiple regression analysis was performed with BCG wave amplitudes, BCG wave force values, and EKG, T wave amplitude used as predictors. Criterion variables were selected cardiorespiratory responses to a standardized bicycle ergometer test. Regression analysis indicated that the amount of variance accounted for in predicting the different criteria did not exceed 30%. The regression analysis indicated that the best predictors of the selected criterion were the BCG wave force values. Wave amplitude along a curvilinear regression line was a better predictor than that along a linear regression line. EKG, T wave amplitude did not serve as a good predictor. Criterions that were predicted with a larger percentage of the variance accounted for were the criterion variables that were directly related to the exercise

test. Pre-exercise and postexercise criterion variables were more difficult to predict.

591. TRAVIS, Thomas M. *A comparative study of three stretching techniques.* M.S. in Physical Education, 1969. 41 p. (J. Wilkinson)
A modified version of the proprioceptive neuromuscular facilitation (PNF) stretching technique was compared with both fast and slow tension stretching techniques. Male Ss (N=24) were randomly assigned to 6 groups and each was administered the 3 techniques in a different order. Ss were exercised for 20 sec. followed by a 10-sec. rest for a period of 2 min., after which a measurement was taken for exercise efforts. Data were analyzed through a multiple regression approach. The proprioceptive neuromuscular facilitation (PNF) technique was superior to the fast and slow tension stretching techniques.

592. VAN TASSEL, Anna M. *A written, self-instructional program for learning the lay-up shot in basketball.* M.S. in Physical Education, 1969. 185 p. (J. L. Thorpe)
A written program of self-instruction for learning the lay-up shot in basketball was constructed according to the principles of programed learning. Five basketball classes with an enrollment of 136 college women were utilized, and each class was randomly divided into 2 groups. One group received the written program for instruction on the lay-up shot and the other group received instruction from an instructor (traditional method). Utilizing a composite score on a modification of the bounce and shoot test as the criterion, performances of the 2 method groups on the lay-up shot during the final evaluation period did not differ significantly.

593. WEEKS, Audrey S. *Conceptualization in the acquisition of skill in golf.* M.S. in Education, 1969. 142 p. (J. A. Thorpe)
Ss were 117 college women enrolled in 4 beginning classes of golf. The conceptualization practice technique was designed to encourage the formation of important insights and understandings into the skill. These Ss concentrated on certain questions related to various phases of the 5-iron hit while practicing. Ss were tested at the completion of the 2½ weeks of practice with a skill test designed to obtain measures of distance, time, and lateral deviation for each trial from which measures of actual distance, velocity, vertical angle of projection, and lateral angle of deviation were obtained. Objectivity coefficients for scoring the test ranged from .75 to .99. Reliability estimates resulted in *r*'s ranging from .06 to .79. Linear regression analyses were used to compare the methods, the Ss of 2 instructors, and the classes, and to test for any interaction between instructors and methods. Traditional classes were significantly better than experimental classes in average velocity, velocity points, and average distance. Both instructors were equally effective with both methods, but Ss of instructor I were better than those of instructor II.

University of Southern Mississippi, Hattiesburg, Mississippi
(W. L. Babin)

594. BRUMFIELD, Miriam Dolores. *A comparison of the relationship of shoulder flexibility and other selected factors to throwing performance by college women.* Ed.D. in Physical Education, 1969. 100 p. (W. L. Babin)

College freshman women (N=35) were tested on the overarm throw involving both accuracy and distance throwing. The variables, shoulder flexibility, shoulder strength, speed of arm movement, age, height, weight, PE background, athletic background, and number and sex of children in the family, were studied. Variables which proved to have predictive value in relation to accuracy throwing were the average of shoulder strength, speed of arm movement, athletic background, and the group of 3 physiological factors. Those variables which showed a significant relationship to distance throwing were arm shoulder strength and athletic background. Shoulder flexibility was not a significant predictor of throwing; shoulder strength was the best physiological variable; flexibility was highly related to strength; either the accuracy or distance test item could have been used; and the best predictor of throwing found was athletic experience.

595. DANIEL, Billy Joe. *The effects of walking, jogging, and running on the serum lipid concentration of the adult Caucasian male.* Ed.D. in Physical Education, 1969. 75 p. (W. L. Babin)

Ss were 24 volunteer graduate students and faculty members (ages 26-47) who were randomly placed into 4 groups of 6 each (control, walking, jogging, and running). Each S in the experimental groups performed a work bout of ¾ mile, 5 days/week for 7 weeks. The speeds for each group were: walking – 5 mph, jogging – 7 mph, and running – 9 mph. Six blood samples were taken from Ss at various intervals and analyzed by a local biochemist. ANOVA revealed a significant difference between the experimental and control groups. Walking reduced the triglyceride concentration but had no effect on the total lipid, phospholipid, or cholesterol concentration. Jogging or running was superior to either walking or no exercise in reducing the serum lipid concentration. Running was not superior to jogging in reducing the serum lipid concentration. Exercise on a treadmill significantly reduced the terminal heart rate.

596. FOREMAN, William Derrall. *The effects of unilateral training on cross training during upper limb activity.* Ed.D. in Physical Education, 1969. 140 p. (W. L. Babin)

Ss (N=45), aged 12-14 years, had 13 measurements taken which were used in the pretest and post-test in formulating the 5 physical factors; namely, muscular strength, muscular endurance, reaction time, speed of movement, and skinfold. Work loads involving elbow flexion and extension were administered for 40 days. Conclusions reached were that muscular endurance, muscular strength, speed of movement, and skinfold measurement could be improved contralaterally through unilateral training. Reaction

time did not improve. Also, cross transfer gains were greater when the transfer came from the preferred to the nonpreferred side.

597. GLEATON, Thomas James, Jr. *Results of excessive pulmonary ventilation on heart rate relative to various work loads and submersion.* Ed.D. in Physical Education, 1970. 76 p. (W. L. Babin)

The effects on 30 male college Ss of hyperventilation on heart rate recovery following various work loads on the bicycle ergometer and treadmill were studied. Also, heart rate during breath-holding in air and in water under both the hyperventilated and nonhyperventilated conditions was investigated. Bicycle ergometer work loads were 3-, 5-, and 7-min. periods requiring 14,775, 24,625, and 34,475 foot pounds of work. Treadmill work loads consisted of simulated 50-, 100-, and 220-yd. dashes. A 30-sec. period of breath-holding was used in both air and water tests. Recovery heart rate following each work load was recorded for 5 min. Significant differences between nonhyperventilated and hyperventilated conditions on heart rate recovery were found in each of the bicycle ergometer and treadmill work loads. This difference indicated a more rapid recovery for the heart when hyperventilation was used prior to work loads on the bicycle ergometer and the treadmill.

598. HARRIS, Irvin David. *The effects of isometric and isotonic training programs on selected variables.* Ed.D. in Physical Education, 1969. 107 p. (W. L. Babin)

Studied were the effects of 2 weight training programs, one based on isometric principles and the other on isotonic principles, on leg extension power, leg extension strength, leg speed, leg reaction time, leg girth, and leg flexibility. Ss (N=60) were assigned to isotonic, isometric, and control groups, and work loads were performed for 6 weeks. The parameters were measured for all groups prior to and at the completion of the training period. Isotonic training methods produced significant ($P < .05$) increases in leg extension strength and girth of the hip. There was no ample statistical evidence that one training method could be selected over the other.

599. McDANIEL, Johnny B. *The relationship of specific gravity to certain physical parameters.* Ed.D. in Physical Education, 1969. 102 p. (W. L. Babin)

Ss were 4 selected groups (N=30) of college male students: varsity football players, varsity basketball players, varsity track and field men, and nonathletic participants. Data included continuous variables: age, weight, height, endurance, power, agility, speed, strength, flexibility, static balance, speed of movement, and reaction time. Categorical variables were group membership, school membership, classification in school, race, position in varsity sports, active varsity sports, prior varsity sports, intramural sports, in season or not, hour tested, off-season training, and individual sports. Categorical predictors that indicated predictive value were off-season baseball, the individual sport of bowling, varsity baseball, position interior lineman, prior baseball experience, in-season training, classification as a freshman, and enrollment at Mississippi State University. The best set of predictors from the continuous variables was power, weight, height, speed, endurance, and reaction time.

600. THOMPSON, Charles B. *A study of environmental sanitation in selected communities in Mississippi with implications for viral infection.* Ed.D. in Physical Education, 1968. 145 p. (T. S. Martin)
The study appraised the sanitary conditions of selected communities in Mississippi to determine if there was a relationship between these conditions and the reportable viral diseases in Mississippi. Data were collected through reviewing records at the State Board of Health and were statistically treated. Although the study failed to show a relationship statistically, the related literature did reveal a relationship between viral disease and sanitation. Interpretation of literature surveyed and findings of the study indicated that coliform organisms existed in 63% of the water supplies during 1967. Forty-six % of the communities did not provide proper sewage treatment. All the communities had improper garbage disposal methods. Eighteen % of the residences had livestock, animals, and poultry. Nineteen % of the residences had problems with drainage.

Springfield College, Springfield, Massachusetts (J. Genasci)

601. BOYD, Lawrence P. *A comparative study of the effects of ankle weights on vertical jumping ability.* M.S. in Physical Education, 1969. 54 p. (E. Steitz)
Three equated groups of SHS basketball players were subjected to a regimen of exercises without weights and with 1½-lb. and 3-lb. weights. All groups improved in vertical jumping ability, but there were no significant differences among the control and experimental groups.

602. BRYNTESON, Paul. *The effects of training frequencies on the retention of cardiovascular fitness.* D.P.E., 1969. 155 p. (W. Sinning)
Male Ss (N=21), aged 20–38, participated in a 5-week conditioning program and a 5-week postconditioning program where Ss trained either 1, 2, 3, or 4 days/week. Ss performed on a bicycle ergometer at 80% of their maximal heart rate for 30 min. and the intensity of exercise was constant throughout the 10 weeks. Ss were tested for maximal oxygen uptake, pulmonary ventilation, heart rate, work-load, and voluntary ventilation; forced vital capacity and expiratory volume in one sec.; and also 5-min. recovery heart rate, oxygen pulse, ventilation equivalence for oxygen, hemoglobin, and hematocrit. At least 3 days/week of exercising on a bicycle ergometer which stimulates the heart to beat at 80% of its maximum value was necessary to maintain cardiovascular fitness following a 5-day-a-week exercise program of equal intensity; and functional improvements in the respiratory system due to training were more readily retained than cardiovascular fitness.

603. ENGRAM, Carol B. *A comparison of two methods of teaching synchronized swimming.* M.S. in Physical Education, 1970. 110 p. (M. van Allen)
Matched groups of swimmers were subjected to either traditional or movement exploration methods of teaching and their learning of selected skills

was subjected to pre- and post-testing analysis. There was no difference in the quality or rate of learning between the groups with one exception (ballet leg). Some specific skills were learned by each group more readily than the others and vice versa.

604. FAZIO, Carol. *The effect of a fitness circuit program on the physical fitness of seventh grade girls.* M.S. in Physical Education, 1969. 59 p. (J. Genasci)

A fitness circuit program affected only the sit-up item of the AAHPER Youth Fitness battery. None of the other items showed a significant improvement in the participating groups of girls.

605. GALLAGHER, Donna. *The relationship of agility to performance in women's intercollegiate basketball.* M.S. in Physical Education, 1969. 57 p. (M. Thorsen)

The hypotheses that high positive relationships would exist between items of the test (McCauliff Agility Components Test) and performance were not supported. The lack of evidence to support the hypotheses was attributed to some unexpected peculiarities of the sample and several recommendations were made for continued investigation.

606. GEER, John M. *A comparison of two freestyle flip turns for short sprint competition.* M.S. in Physical Education, 1969. 33 p. (M. Thorsen)

There was a significant difference between the one-arm flip turn and the 2-arm pull through turn as demonstrated by that portion of the turn described as the "in-time," where a significant difference was found in favor of the one-arm flip turn.

607. GOURLEY, Lenore E. *Self-acceptance in relation to the acquisition of swimming skill.* M.S. in Psychology, 1969. 44 p. (A. R. Kaynor)

The American Red Cross beginner swimming test was used to select 68 nonswimmers in girls' JHS PE classes. Self-acceptance was assessed by means of the Berger Self-Acceptance Scale. Ss were divided into 2 groups equated on race, IQ, body build, parental occupation, and amount of self-acceptance. The experimental group underwent another 6 weeks of swimming while the control group played a volleyball tournament. After 6 weeks self-acceptance and swimming skill were again assessed. The test-retest method yielded a positive correlation of .38 on self-acceptance for the experimental group, and the control group yielded a positive correlation of .99. The *t* ratio for self-acceptance between the groups was a non-significant .309 at the start, and 2.72 ($P < .05$) at the conclusion. The experimental group significantly increased in self-acceptance after acquiring swimming skill.

608. HAYES, Donald. *An investigation to determine some of the principles of design and materials of a universal lifejacket.* M.S. in Physical Education, 1969. 138 p. (E. Seymour)

Six prototype lifejackets were selected on the basis of a preliminary study. These jackets incorporated various design principles and were constructed of different flotation materials. Test centers were established across Canada and 1,653 individual tests were conducted. Specific conclusions

were drawn about positioning, length, harness, and material of the jackets. From these conclusions it was possible to make recommendations for the construction of a universal lifejacket and the requirements to be met.

609. HELLER, Ian Zane. *The validity of predicting motor educability in gymnastics.* M.S. in Physical Education, 1969. 41 p. (J. Genasci)
This study utilized inexperienced college students in learning a pommel horse routine and it was concluded that the Iowa Revision of the Brace test scores did relate positively to the rate of learning a beginning routine.

610. KELLY, John M. *The relationship between selected measures of pulmonary function and cardiovascular fitness.* D.P.E., 1969. 164 p. (E. Seymour)
Thirty-five volunteer male Ss, between 20 and 30 years of age, were subjected to strenuous exertion and their pulmonary function was evaluated by use of 10 dimensional and 11 functional lung measurements. The forced expiratory volume in one sec. was the only functional pulmonary measurement that was significantly related to cardiovascular fitness. This relationship was not large enough to be considered a valid measure of cardiovascular fitness within itself. Apparently, in young, healthy, male adults pulmonary function is not the factor limiting forwarding of oxygen to the tissues. Useful regression equations for prediction of maximum oxygen uptake could not be developed.

611. KRAMER, Peter G. *Developmental trends of motor performance items in mongoloid males.* M.S. in Physical Education, 1969. 67 p. (W. Sinning)
Performance items of reflex time, reaction time, performance time, and grip strength were measured at different age levels. Additionally, the mongoloid scores were compared to a normal population of the same age group. The mongoloid Ss were generally incapable of making rapid conscious responses. The reflex time was the only score not significantly inferior to normals.

612. LAIRD, E. Marie. *A comparison of selected mechanical characteristics of men and women while performing the long jump.* M.S. in Physical Education, 1969. 62 p. (W. Sinning)
Maximum flexion and extension as well as amplitude of movement and angular velocity of the hips, knees, and ankles; average speed at take-off; time spent on take-off board and distance jumped were recorded and analyzed from physiographic data derived from 5 male and 5 female Ss. The only mechanical factor contributing to the better performance of the men was their ability to attain greater approach speed at the time of take-off.

613. LAVIN, Roberta Klar. *The participation of the physically fit and physically unfit Springfield College women in leisure activities.* M.S. in Physical Education, 1969. 90 p. (J. Genasci)
The physically fit Ss did not participate in more physical activities during leisure time than the physically unfit students.

614. MacDonald, William J. *See* STEARNS, William J.

615. MacGREGOR, D. Barrie. *A comparative investigation of fitness performance in rural and urban school boys.* M.S. in Physical Education, 1969. 55 p. (W. Doss)
Fourteen-year-old boys who had lived in typical rural and urban settings on Prince Edward Island provided the sample population. It was hypothesized that the urban boys would score better on selected fitness tests of running, jumping, and sit-ups. The hypothesis proved valid except for the 50-yd. dash and the flexed-arm hang.

616. MALLAIS, John B. *A survey on the use of the goalie face mask in ice hockey.* M.S. in Physical Education, 1969. 119 p. (J. Genasci)
Experts (N=125) comprised the population surveyed. Data yielded from the opinionnaire brought forth a host of specific findings regarding the use of the goalie face mask.

617. MARSHALL, Stanley J. *The organizational relationship between physical education and intercollegiate athletics in American colleges and universities.* D.P.E., 1969. 403 p. (E. Seymour)
Intercollegiate athletic programs may be established within the PE department, or they may be constituted as separate and autonomous departments. Four model organizational approaches were devised as well as a status questionnaire, a rationale scale, and an interview schedule. These models and instruments were used to gather evidence from directors of programs. There appears to be considerable desire to foster and maintain separate administrative units for PE and intercollegiate athletics. This attitude seems especially prevalent among directors of athletics. Directors of combined departments and directors of PE, while more favorable toward combined departments, indicated apprehension about organizing intercollegiate athletics as a function of the PE department. Several implications for future action were presented.

618. MARTIN, Lawrence A. *The effects of competition upon the aggressive responses of basketball players and wrestlers.* D.P.E., 1969. 179 p. (E. Seymour)
The Rosenzweig Picture-Frustration Test was used to measure aggression and other responses in 97 male undergraduates with varying backgrounds in athletics after winning, losing, and during normal emotional states. Overall patterns of aggression were difficult to determine for sport groups or outcome of the contest. The catharsis theory was verified for intercollegiate participants after winning competition. However, the effects of losing competition tended in most cases to substantiate the interaction theory. An implication offered was that PE should emphasize the importance of permitting aggressive behavior within limits, so that the participant develops self-control, emotional maturity, and insight into his capabilities.

619. McNAMEE, Matthew Allen. *A study of graduate curriculum offerings in administration of athletics.* M.S. in Physical Education, 1969. 65 p. (E. Steitz)
No graduate program in athletic administration in the 10 top ranked PE institutions is presently available for those interested in pursuing this vocational field. Some recommendations were offered for the amelioration of this situation.

620. MOORE, Susan B. *Grading girls' physical education in the senior public high schools of Ontario.* M.S. in Physical Education, 1969. 85 p. (J. Genasci)
It was concluded that according to acceptable standards and principles too much emphasis is placed on attendance, health habits, attitudes, effort, and the like for the final grade; some instructors felt that grading was not necessary, but continued to do so even though it was not required; it was the responsibility of the department to devise its own system of grading in most instances; and the Ontario Department of Education gave very general guide lines for grading in PE.

621. MORRIS, Martha J. *Selected teacher qualities desired by high school girls.* M.S. in Physical Education, 1969. 78 p. (J. Genasci)
A profile of desirable teacher qualities as developed by unfit girls was compared to one developed by fit girls. The Purdue Rating Scale was used for the teacher qualities and the AAHPER Youth Fitness Test was used for fitness classification. Of the 10 desirable qualities tested only 2 were found to be significantly different: the low fit girls desired a more sympathetic attitude, and the high fit girls placed the ability to stimulate intellectual curiosity higher than did low fit girls.

622. ODENEAL, William T. *The history and contributions of the United States Volleyball Association.* D.P.E., 1969. 259 p. (C. Shay)
An effort was made to create a synthesis of the development and contributions of the United States Volleyball Association, including the lives of noteworthy individuals who devoted their energy and talents to its cause. The gathered evidence was categorized chronologically into: The Early Formative Years 1895–1916; The Developmental Years 1917–1928; The Maturing Years 1928–1945; and Modern Volleyball 1946–1965. A sequence of developments and enumeration of contributions were authenticated.

623. PATAKY, Robert L. *A cinematographic and mechanical analysis of the backward lever pull to iron cross on the still rings.* M.S. in Physical Education, 1969. 60 p. (H. Childs)
Specifically, an attempt was made to plot the direction of movement of the head, shoulder, hip, ankle, and the moving center of gravity; and to determine how these movements related to the performance of the skill. Specific conclusions have been enumerated for each portion of the skill which was analyzed.

624. PATTERSON, Neil F. *Pinning combinations in collegiate wrestling.* M.S. in Physical Education, 1969. 55 p. (J. Genasci)
The teams from which the data were collected were all from colleges and universities in New England and the surrounding area, including the New England Intercollegiate Wrestling Association Championship Tournament for 1969 and the Springfield College dual meet season for 1968–1969. There was not a significant lack of emphasis on pinning combinations; the scoring of predicament and near fall points would not be considered a determining factor where they were scored; and the half nelson and crotch was the most frequently used pinning combination.

625. PAWLAK, Paul, Jr. *Financial aid award to scholar-athletes by member institutions to six conferences during the 1963-64 school year.* M.S. in Physical Education, 1969. 119 p. (J. Parks)
The survey was returned by 39 athletic directors (75%) from the 6 conferences studied. It was concluded that football players were awarded a greater total number of grants-in-aid than any other sport participants. There was an insignificant correlation between the number of grants-in-aid awarded and a school won-lost record (football). Need was not a determining factor when awarding grants-in-aid.

626. POE, George H., III. *The relationship of selected anthropometric measurements to swimming time of college varsity swimmers in the fifty-yard front crawl stroke.* M.S. in Physical Education, 1969. 38 p. (M. Thorsen)
The hypothesis was made that selected anthropometric measures would show a significant negative relationship to swimming time of the 50-yd. front crawl stroke. Only one of the variables, handwidth, yielded a significant negative correlation with speed of swimming. Twenty-eight varsity swimmers participated in this study.

627. POLIDORO, J. Richard. *Content and status of state legislation pertaining to programs of physical education.* D.P.E., 1969. 257 p. (E. Seymour)
A nationwide survey of various administrative authorities in public education provided for the development of a model state law for the nature, form, and content of PE. A comparison was then made between the existing state laws and the model law. No state has legislation which is totally compatible with the model state law. The content and status of state legislation pertaining to programs of PE is widely diverse, scattered, and vague, and is considered to be highly inadequate and insufficient.

628. RAY, Barbara J. *Attitudes of high school girls and their parents toward physical education.* D.P.E., 1969. 157 p. (E. Seymour)
The evidence indicates that the students who achieved high fitness scores and their parents viewed the contributions of PE class far more favorably than did the students who were less physically fit and their parents; and the parents and students differed in their views of the mental-emotional contributions. Parents and students for both groups had similar views about the physical-physiological outcomes and the social contributions, while with regard to the emphasis placed on PE in the total school program, the parents of the low fit group view this more favorably than their daughters. It was just the opposite with the high fit group. Attitudes toward PE were positively related to the SHS girls' achieved physical fitness scores. A lower score resulted in a lower attitude toward PE.

629. RICHWINE, Martin W., III. *International relations activities in professional preparation programs of health, physical education, and recreation.* M.S. in Physical Education, 1969. 118 p. (A. Kidess)
A stratified random sample of 4-year institutions in the U.S. was surveyed. The evidence allowed several conclusions regarding the limited involvement of faculty, number of courses, and attitudes for the full development of study in international relations in H.P.E. & R.

630. ROBERTSON, James B. *A descriptive analysis of selected experiences of male physical education student teachers at Springfield College.* M.S. in Physical Education, 1969. 95 p. (W. Doss)
Over 85% of the most frequently reported experiences related to program, students, and personal observations and activities, while only 14% related to faculty, community, facilities, and equipment. The host of specific findings and the several implications drawn would be important to administrative personnel responsible for student teaching.

631. SCHLOTT, Karen O'Connor. *A comparison of two methods of teaching selected skills in field hockey.* M.S. in Physical Education, 1969. 74 p. (J. Parks)
Two approaches to teaching field hockey to beginners were used: the problem-solving method, and the explanation-demonstration-execution method. The data from the specific skill tests used did not demonstrate any difference in learning and performing between the methods.

632. SEETHARAMAN, A. N. *A comparative study of the aluminum and wooden tennis rackets.* M.S. in Physical Education, 1969. 44 p. (E. Steitz)
Three characteristics were examined: velocity of the ball upon leaving the rackets; resilience of the frames; and air resistance of the frames. The aluminum racket was superior in each characteristic measured.

633. SHEA, John. *A cinematographic study of two methods of performing the propulsive hand-arm phase of the butterfly stroke.* M.S. in Physical Education, 1970. 60 p. (W. Sinning)
The straight-line application of force was more effective than the reversed-S curve method in all variables measured; hence it was concluded that the straight-line application of force method is more effective as a technique of swimming the butterfly stroke. Some precautions on adoption of the conclusion were offered by the investigator because of the small sample population and their prior skill training. The effectiveness of the use of dichroic mirror (split image) for cinematography in analyzing sports performance was amply demonstrated.

634. SINGH, Baljeet. *The effects of two motivational techniques on the performance of the girls on selected items from the AAHPER physical fitness test.* M.S. in Physical Education, 1969. 79 p. (A. Kidess)
There was no superiority of medal or verbal motivation on the composite score. Verbal motivations did seem to have a positive effect over verbal command on selected test items when used with seventh grade girls.

635. STABENOW, Allmuth W. *The relationship of forward inclination of the shoulders to measures of organic fitness and muscular strength of college women.* M.S. in Physical Education, 1969. 67 p. (M. Thorsen)
Ss were 25 undergraduate college women ranging in age from 18 to 22 years. A practical shoulder forward inclination measurement technique

was devised which allowed reporting in degrees or percentage. A negative and significant relationship existed between forward inclination of the shoulders and organic fitness as measured by the Harvard Step Test. The relationship between shoulder inclination and shoulder girdle strength as measured by the cable tension strength test was insignificant.

636. STEARNS, William J. and MacDONALD, Frederic W., Jr. *A mathematical analysis of swimming the breaststroke and dolphin butterfly strokes.* M.S. in Physical Education, 1969. 49 p. (C. Silvia)

Springfield College and Yale University swimmers were utilized in whole stroke and arms alone and legs alone swimming over a distance of 60 ft. for the 2 strokes. In the breaststroke the arms contributed 53.5% while the legs contributed 46.5%. In the dolphin butterfly the arms contributed 62.9% while the legs contributed 37.1%. It was implied that more emphasis should be placed on the utilization of the arms. The Pythagorean theorem can be applied to each stroke if a constant is used. For the breaststroke the constant is .75; for the dolphin, .90. The formulas would be .75 or .90 ($Va^2 + Vl^2 = Vw^2$).

637. STETZEL, John W. *A study to determine the basic reasons for selection of team field alignment in high school and college soccer.* M.S. in Physical Education, 1969. 75 p. (J. Parks)

The selection of soccer team field assignments is based on game knowledge of the coach, his past experience (in winning) with the alignment, his personnel, the alignment's adaptability to various offenses and defenses. The 4-man foward line with 3 or 4 fullbacks seems most desirable. Evidence was gathered from coaches according to their actual practice over a 3-year period and a designation of an "ideal team."

638. THIFFAULT, Charles. *A comparative study of ice hockey starts with the puck under control.* M.S. in Physical Education, 1969. 36 p. (W. Doss)

The 4 starting techniques under investigation were front start, side start lead-fast, side start cross-over, and running start. In each instance, the skater (male college PE majors) had to control the puck. The skaters were practiced in each technique and were tested in a random order. The *F*-ratio was significant and further analysis (Newman-Keuls) revealed the side start lead-foot technique to be significantly faster than the 3 other methods.

639. WILCOX, Gary W. *An analysis of the professional preparation of college head football coaches in the Northeast.* M.S. in Physical Education, 1969. 115 p. (W. Doss)

This study determined, analyzed, and evaluated the preparation of 107 college head football coaches, and their recommendations for preparation. There were multiple findings such as 74% of the coaches had earned at least one graduate degree. The most prevalent field of study was HPE. Regarding experience, the coaches felt JHS coaching and professional play experience to be insignificant, but college football playing experience was judged to be an absolute necessity.

640. WUN, Chun Kwun. *A comparison of methods of executing the throw-in in soccer.* M.S. in Physical Education, 1969. 39 p. (C. Shay)
The methods under investigation were the run and stationary square stance throw-in, and the run and stationary staggered stance throw-in, to determine which would give the best performance in terms of greatest distance and accuracy. Data derived from 15 varsity players showed that the staggered stance throw-in gives a better performance in terms of greater distance with the same amount of accuracy.

641. WRIGHT, Alexander. *A study to determine the effects of physical education and educable mentally retarded children's motor ability and motor fitness.* M.S. in Physical Education, 1970. 63 p. (H. Childs)
Mentally retarded children classed as educables participated in an adapted PE program of 6 weeks, with motor fitness and ability tests administered before and after the program. After comparing the test results to a control group, utilizing the analysis of covariance technique, it was concluded that motor fitness and ability of these children did improve significantly over the control group. It was implied that there was no motor deficiency due to mental retardation for these children, and further that the curriculum of PE could be geared to emphasize other factors, together with physical development.

Stanford University, Stanford, California (J. E. Nixon)

642. BRADSHAW, James W. *A study of effort as related to achievement in the 600-yard run.* Ed.D., 1969. 136 p. (W. K. Ruff)
Each runner's time and recovery heart rate were recorded as 192 boys, aged 15, made a series of 600-yd. runs, beginning at a slow pace for the first run, then increasing the pace for each succeeding run until each boy reached his limit or finished 10 required speeds. Results showed that the time a boy achieves during the 600-yd. run will improve in direct linear proportion to the recovery heart rate (effort) he exerts during the run. From results, a chart was constructed that a teacher or coach could use to assess endurance ability, identify those who perhaps should not exert allout, determine the quality of both the time achieved and the effort exerted during an allout test, discover boys who may make good competitive runners, and predict a runner's potential "best" time for the 600-yd. run by how he performs when he exerts less than allout.

643. HIGGINS, Joseph Ronald. *Performance phenomena involved in arresting errors in movement.* Ed.D. in Physical Education, 1969. 150 p. (J. E. Nixon)
The phenomena involved in arresting errors in movement while performing a step-function tracking task were investigated. Eleven Ss performed a series of 224 moves in response to step-function displacements of a horizontal line displayed on an oscilloscope screen. Proprioceptive reaction time for each S was determined on an instrument compatible with the actual testing situation and compared with the corrective response times exhibited

for incorrect moves. Incorrect responses and correct responses were analyzed for initial latency and time to peak velocity (time between initial response and the point at which the limb reaches peak velocity). Electromyographic techniques were also employed for descriptive purposes. Ss arrested errors in movement in less time than could be explained by either visual or proprioceptive feedback. The results strongly support the notion that for the type of motor task utilized, internal monitoring of motor output and prearranged motor programs are capable of arresting and correcting errors in movement without benefit of either visual or proprioceptive feedback. The electromyographic portion of the analysis revealed an apparent relationship between the appearance of reciprocal inhibition and the rapidity with which incorrect responses were corrected.

644. PAULAT, James G. *The effects of augmented videotaped information feedback and loop film models upon learning of a complex motor skill.* Ed.D. in Education, 1969. 123 p. (J. E. Nixon)
The results of this study indicated that the video treatment was highly significant ($P < .001$) while the loop film model treatment was not significant.

Stephen F. Austin State University, Nacogdoches, Texas
(C. O. Dotson)

645. DOYLE, George Wesley. *An investigation of leadership characteristics of high school students at Robert E. Lee High School, Baytown, Texas.* M.Ed. in Physical Education, 1969. 99 p. (C. O. Dotson)
SHS leaders and near-leaders in extracurricular activities were compared on the AAHPER Youth Fitness Test, the Cowell Social Adjustment Index, the SRA Primary Mental Ability Test, the SRA Survey of Interpersonal Values, and scholastic achievement. Sixty senior students divided equally among 4 groups of male and female leaders, and male and female near-leaders were included in the study. Leaders have more desire for leadership and are more socially adjusted than near-leaders. Students tend to select leaders whose intelligence is only slightly above average. Males seem to have more desire to be leaders than do females, and also exhibited significantly higher physical fitness percentiles than the females. Females, on the other hand, were more adept in scholastic achievement and desired more support than did males. Although leaders' scores were not significantly higher than near-leaders' in physical fitness, scholastic achievement, and benevolence, they were well above the average.

646. SIMPSON, Dallis. *Attitudes of varsity athletes toward physical activity.* M.Ed. in Physical Education, 1970. 75 p. (C. O. Dotson)
Kenyon's Attitude Toward Physical Activity Scale, Form D was administered to 73 athletes participating in collegiate varsity football, basketball, track, tennis, and golf. Overall, the varsity athletes tended to exhibit positive attitudes toward physical activity. Physical activity perceived as "an ascetic experience" and for "catharsis" were expressed equally

as the strongest positive values. These were followed by equal expressions for physical activity perceived for "health and fitness" and as "a social experience." "Pursuit of vertigo" was not generally expressed as a perceived value. All athletes, however, tended to respond negatively to physical activity perceived as "an aesthetic experience." Results suggested that mode of sport is not a factor in the formation of attitude profiles.

Syracuse University, Syracuse, New York (J. H. Shaw)

647. GREENBERG, Jerrold S. *The relationship between the frequency and the effectiveness of selected supervisory behaviors as perceived by physical education teachers and their supervisors in selected secondary schools of New York State.* Ed.D. in Physical Education, 1969. 141 p. (J. H. Shaw)

An instrument measuring perception of frequency and effectiveness of supervisory behaviors was developed and administered to 237 teachers and 41 supervisors from 38 school districts in New York State. The data were analyzed by correlations, *t* tests, *F* tests, Scheffé tests, and two-way ANOVA. Teachers and supervisors agreed on the rank order of the selected supervisory behaviors as regards their frequency and effectiveness, but disagreed as to the degree of frequency and effectiveness of these behaviors. Sex and age were related to teachers' perceptions of frequency and effectiveness of supervisory behaviors, whereas level of education and coaching duties were not. Tenure status, teaching experience, and type of school district were related to teachers' perceptions of the frequency of supervisory behaviors but not to their perceptions of the effectiveness of these behaviors.

648. PESARESI, Edward. *The effect of observation by experimenters differing in authority on gross motor performance.* Ed.D. in Physical Education, 1969. 75 p. (J. H. Shaw)

Ninety male undergraduate PE majors were randomly assigned to participate under an Authority Experimenter, a Quasi-Authority Experimenter, or a Non-Authority Experimenter in gross motor performance. The first time all Ss performed in isolation, while the second time one-half (N=15) performed in the presence of experimenter, while the other half of each group (N=15) again performed in isolation. ANOVA indicated that the 3 groups differed significantly in speed performance but not agility. Speed data indicated that Ss who performed in isolation for the Authority Experimenter were significantly faster than Ss who performed in isolation for the Quasi-Authority Experimenter or Non-Authority Experimenter. Time 2 data for those Ss (N=45) who were observed by their experimenters indicated that the 3 groups differed significantly in speed but not agility, with those performing in the presence of the Authority Experimenter significantly faster than the other 2 groups in the same situation. Gross motor speed was significantly affected by the passive presence of all 3 types of experimenters, and the status of the experimenter determined the level of response, whether he was absent or present during speed performance.

Temple University, Philadelphia, Pennsylvania (R. A. Berger)

649. LUKAS, Aino. *The relation of flexibility and strength to posture at selected joints.* Ed.D. in Physical Education, 1968. 158 p. (L. E. Kindig)

650. BRUESS, Clint Edward. *The number of isotonic exercise periods per week necessary for the maintenance of an established level of muscular strength.* Ed.D. in Physical Education, 1968. 74 p. (R. D. Liverman)

651. VINCENT, Murray L. *The effects of two different endurance training programs on selected red blood cell variables.* Ed.D. in Health Education, 1968. 128 p. (R. D. Liverman)

652. SMITH, Charles Donald. *The caloric cost and cardiac cost of running at selected intensities and distances.* Ed.D. in Physical Education, 1968. 105 p. (J. B. Oxendine)

653. METZGER, Paul Albert, Jr. *The effects of various practice sequences upon the bilateral transfer and retention of gross motor skills.* Ed.D. in Physical Education, 1968. 90 p. (J. B. Oxendine)

654. COHEN, Barbara Ann. *Video and verbal feedback in learning motor skills.* M.Ed. in Physical Education, 1968. 72 p. (T. W. Evaul)

655. JACKSON, Gary Robert. *The effect of training at three different heart rate levels upon cardiovascular fitness.* M.Ed. in Physical Education, 1968. 52 p. (A. L. Olson)

656. ADELIZZI, Robert A. *Electrical activity and types of muscular contraction.* M.Ed. in Therapeutic Physical Education, 1968. 42 p. (D. F. Mapes)

657. RICE, Mary A. *An electromyographic study of specific muscles involved in the lacrosse cradle.* Ed.D. in Physical Education, 1969. 89 p. (L. E. Kindig)

658. BIERSCHEID, Robert L. *A study of the effects of utilizing three methods of programed instruction on selected motor skills in bowling and the knowledge of bowling etiquette and safety.* M.Ed in Physical Education, 1969. 62 p. (T. W. Evaul)

University of Tennessee, Knoxville, Tennessee (E. K. Capen)

659. BRIMI, Barbara A. *A critical review of literature relative to certain types of mental rehabilitation through exercise and sports.* M.S. in Physical Education, 1969. 52 p. (E. K. Capen)

660. BROWN, Curtis D. *A comparison of physical fitness gains of high, average, and low reading achievers in the first grade.* M.S. in Physical Education, 1969. 58 p. (B. A. Plotnicki)

661. EZELL, Melvin H., Jr. *The comparative effects of correct and incorrect postperformance feedback upon college men exhibiting high and low self-concepts.* Ed.D. in Physical Education, 1969. 65 p. (E. K. Capen)

662. HAMMONTREE, James L. *An evaluation of the recreation program of Clinton, Tennessee.* M.S. in Physical Education, 1969. 91 p. (S. A. Venable)

663. HOGGE, Thomas J. *A critique of current theories of strength development.* M.S. in Physical Education, 1969. 43 p.

664. HUDSON, Lillian E. *A study to determine the influence of learning badminton on the subsequent learning of tennis.* M.S. in Physical Education, 1969. 37 p. (B. A. Plotnicki)

665. LLOYD, John R. *An experimental study to determine the relative effectiveness of two methods of aim in teaching beginning bowling.* M.S. in Physical Education, 1969. 37 p. (S. A. Venable)

666. MONROE, Nancy C. *A comparison of selected personality traits of college women with an interest in sports activities and college women with an interest in modern dance.* M.S. in Physical Education, 1969. 57 p. (E. K. Capen)

667. PICKERING, Richard L. *A critical analysis of developmental and testing exercises for the anterior abdominal musculature.* M.S. in Physical Education, 1969. 53 p. (H. G. Welch)

668. SWEENEY, Harry F., Jr. *The effects of two types of visual sensory input serving to provide knowledge of results in the task-completion phase of instruction on the learning of a selected gross motor skill.* Ed.D. in Physical Education, 1969. 105 p. (E. K. Capen)

669. HAYNES, Neil R. *An evaluation of recreation programs in selected towns in West Tennessee with emphasis on the recreation program of Bruceton, Tennessee.* M.S. in Physical Education, 1969. 86 p. (S. A. Venable)

University of Texas at Austin, Austin, Texas (L. W. McCraw)

670. COLEMAN, Alfred E. *A comparison of isotonic and isometric exercises performed on contralateral limbs.* Ed.D., 1969. 117 p. (L. W. McCraw)

Ss (N=48) divided randomly into 4 groups participated in different training programs for developing strength. These programs consisted of differential isometric or isotonic training of contralateral arms. Both methods utilized a weight load of 5RM and a total contraction time of 40 sec. per exercise session. Isotonic and isometric strength was measured before, during, and at the end of the training period. Analysis revealed no significant difference in the strength developed by either method in the exercised or unexercised arm.

671. EARLY, Ronald G. *Work capacity in hot environmental conditions as affected by intake of water, physiologic saline, and a water-salt-glucose-ascorbic acid solution.* Ph.D., 1969. 127 p. (S. Burnham)

Measures of heart rate, rectal temperature, and sweat rate were made on 9 male college students during all phases of a 2-hour work session on a motor-driven treadmill. Conditions of tap water intake to equal sweat loss, tap water intake ad libitum, physiologic saline intake to equal weight loss, physiologic saline ad libitum, Brake time intake to equal weight loss, and Brake time ad libitum were studied. Water given ad libitum or to equal sweat loss was the most physiologically desirable fluid to ingest during work.

672. LITTLE, Mildred J. *An evaluation of selected cardiovascular endurance tests on women of three different body builds.* Ed.D., 1969. 161 p. (D. E. Campbell)

College women (N=24) divided into 3 groups on the basis of body build were given selected cardiovascular endurance tests, including the Balke Treadmill Run, Skubic-Hodgkins Step Test, 600-yd. run/walk, and the 300-yd. run. Mean heart rate during the exercise phase of a 12-min. treadmill run served as the criterion of cardiovascular endurance. No significant difference resulted between Ss of slender and average build on any of the test variables of cardiovascular endurance or on the treadmill run, but the heavy build Ss showed significantly less endurance on all test measures and had significantly higher heart rates during the treadmill run. Excess weight was a hindrance to the performance of young adult women on tests of cardiovascular endurance. However, possessing a body weight that is well below the desired weight does not affect the performance any differently than possessing a body weight that is considered average.

673. LYLE, Berton E. *An evaluation of the speed exercise technique in developing the components of fitness.* Ed.D., 1969. 115 p. (L. W. McCraw)

Six strength and endurance measurements were taken on 80 male college students randomly assigned to 2 exercise groups. Group I exercised 5 times a week following the traditional conditioning program of an assigned

number of repetitions for each exercise. Group II exercised 3 times a week utilizing the speed exercise technique wherein Ss performed each exercise as rapidly as possible within a given time limit. Both groups exercised for 6 weeks and were tested before, following, and at the conclusion of another 10-week period. No significant differences were found in the treatment effects of the 2 exercise groups, and it was concluded that the speed exercise technique should have application to school and individual exercise programs because of its economy of time, adaptability to individual abilities, ease of administration, motivation of participants, and equipment requirements.

674. McCLENNEY, Byron N. *A comparison of personality characteristics, self-concepts, and academic aptitude of selected college men classified according to performance on a test of physical fitness.* Ed.D., 1969. 80 p. (L. W. McCraw)

Measures of academic aptitude, personality characteristics, and self-concept were made on 100 junior college Ss divided on the basis of high and low levels of physical fitness. No significant difference was found between groups on measures of academic aptitude or self-concept, but the personality factor questionnaire revealed the high physically fit group to be more group dependent while the low fitness group was more self-sufficient. Also, low fit, younger Ss appeared to be more suspicious and self-opinionated while the high fit, younger Ss were more trusting and free of jealousy.

675. BURKE, Nelda J. *Selected motor activities and the development of laterality in first graders.* M.Ed., 1969. 101 p. (D. E. Campbell)

First grade children (N=106) were tested for hand, eye, and foot preference, right-left awareness, reading readiness, and achievement at the beginning and end of the school year. Between testing periods, half of the children participated in regular PE activities while the other half took part in a special program of selected gross motor activities designed to aid in the development of a sound spatial orientation. No apparent relationship existed between lateral development and reading ability in normal Ss. Motor training did not significantly enhance the development of lateral preference but did assist in the development of lateral awareness. No relationship was found between the development of lateral preference and lateral awareness.

676. BYRD, Michael R. *Comparison of motor ability of normal and mentally retarded children at the intermediate level.* M.Ed., 1969. 43 p. (L. W. McCraw)

Students (N=827) at the intermediate elementary school level and 30 comparable mentally retarded Ss from the Austin State School were tested on 10 selected items from the original Brace Motor Ability Test, standing broad jump, and the 25-yd. dash. Measurements of height, weight, skinfold, and IQ were also taken. Mentally retarded children in the public schools were significantly taller and heavier but not more obese than normal children in the public schools. The motor ability of normal children was considerably better than that of the mentally retarded in the public schools. Mentally retarded children in the state institution were

more obese and less motorically capable than mentally retarded children in the public schools.

677. FLETCHER, Linda K. *An investigation of nutrition quackery, 1950–.* M.Ed., 1969. 261 p. (J. H. Haag)

The extent of nutrition quackery, including the cost, reasons for existence, characteristics, promotional claims, use of advertising, and food fallacies were examined. The organizations and methods for combating and controlling nutrition quackery were also revealed. The conclusion was drawn that nutrition quackery is still one of the nation's biggest health problems, and the combined efforts of scientific research, improved regulations with more severe penalties, vigorous law enforcement, and expanding educational programs are necessary to combat the falsehoods and misstatements of the nutrition quack.

678. HOLDEN, Orbry D. *Normal and Jendrassik reflex times of athletes and nonathletes at different age levels.* M.Ed., 1969. 101 p. (W. Wyrick)

Male Ss (N=98) of JHS, SHS, and college age were tested for patellar reflex time under 3 conditions of normal, maximum, and ½ maximum Jendrassik maneuvers. One-half of the Ss were athletes while the other half had only participated in required PE activities. Analysis revealed no relationship between normal reflex time and age, anthropometrics, or athletic background. Reflex times were significantly shortened by using Jendrassik maneuvers, and the greater the amount of exertion used the greater the reduction in reflex time.

679. O'BRIEN, Michael. *An evaluation of the Exer-Genie method of strength development as an in-season maintenance program for high school athletes.* M.Ed., 1969. 49 p. (S. Burnham)

Two groups of SHS athletes were tested for performance and strength before and after the basketball season. Performance tests included sit-ups, push-ups, and jump and reach. Strength tests included arm flexion-forearm extension, leg extension, and trunk flexion. During season, the experimental group participated in the 10 station Exer-Genie circuit prior to basketball practice while the control group participated in basketball practice only. Results showed that the 2 groups did not differ significantly on their pretest or post-test scores.

680. SLACKS, Rosemary. *The effects of physical activities upon perceptual ability, reading ability, and academic achievement.* M.Ed., 1969. 97 p. (D. E. Campbell)

Two groups of first grade children were measured by the Perceptual Forms Test, Metropolitan Readiness Test, Metropolitan Achievement Test, and teacher ratings before and following a 6-months treatment period. During this period, the experimental group received a PE program of selected Kephart-type activities while the control group received the traditional PE program. Since no significant differences were found between the experimental and control groups on perceptual and academic achievement measures, the conclusion was that selected Kephart-type physical activities did not affect changes in perceptual or academic ability of the average first-grader.

681. THIRSTRUP, Larry Lee. *An electrodiagnostic investigation of effects of varied temperature and exercise upon irritability, excitability, and strength in the biceps brachii.* M.Ed., 1969. 90 p. (L. W. McCraw)

Male college students (N=24) participated in 4 laboratory sessions where they received treatments to investigate the effects of applied heat, applied cold, and isotonic exercise on the irritability, excitability, and strength levels of the biceps brachii muscle. Irritability and excitability were measured through use of a Teca Chronaximeter and Variable Pulse Generator. Isometric strength was measured by an aircraft cable tensiometer. Results indicated that irritability of the biceps brachii muscle was significantly lessened by applied heat, and excitability was significantly decreased following application of cold on the skin surface. Strength of the elbow flexor muscles was not significantly changed as a result of applied heat or cold, but was decreased by warm-up exercise.

682. WARNER, George A *Comparison of isometric and Exer-Genie exercises in developing strength.* M.Ed., 1969. 63 p. (L. W. McCraw)

Male college students (N=52) participated in an 8-week program to develop strength of arm, trunk, and leg muscles. One group used the Exer-Genie exerciser to do 3 repetitions of 4 exercises with each repetition lasting 20 sec. The isometric group did the same exercises with the same number of repetitions and length of contraction time. The 2 groups did not differ significantly on the pretest, nor on gains from pretest to post-test on any measure. It was concluded that the Exer-Genie was a highly useful apparatus for the individual who does not have a large amount of time to devote to exercise.

683. WRIGHT, Betty L. *Alcohol education: Content and methods for secondary school health education.* M.Ed., 1969. 211 p. (J. H. Haag)

An investigation of content and methods of teaching alcohol education was made using 125 students in coeducational health education classes. A compilation of factual information concerning alcoholic beverages, presentation of the factual information, interviews, and other survey techniques to evaluate the effectiveness of the content and teaching methods were the steps used in the study. The conclusion was reached that alcohol education as conducted in this study resulted in a better understanding by the student for the use, nonuse, and misuse of alcoholic beverages.

684. WRIGHT, Karen B. *Expressed and perceived attitudes of students and teachers toward physical education.* M.Ed., 1969. 64 p. (M. B. Alderson)

Nineteen PE teachers and 1,440 tenth grade girls were given the Wear Attitude Inventory to determine if significant differences existed between the expressed attitudes of students and the teachers' perception of the students' attitudes. Differences between the expressed attitudes of the teachers and the students' perception of the teachers' attitudes were also investigated. Analyses revealed that teachers had a better attitude toward PE than did the classes as a group. There was no significant difference in the attitudes of students and their teachers' perception of

their attitudes; however, there was a difference in the expressed attitudes of teachers and the students' perceptions of the teachers' attitudes. Students perceived a less favorable attitude than the teachers expressed.

Texas A&M University, College Station, Texas (L. J. Dowell)

685. LUQUETTE, Aurelian J. *Some immediate effects of a smoking environment on children of elementary school age.* Ph.D., 1969. 167 p. (C. W. Landiss)

Boys and girls (N=51) were alternately exposed to a 30-min. smoking and nonsmoking environment to determine effects on heart rate and blood pressure. Another group of 52 school age children were exposed to a smoking environment only, with pre-post blood sample tests administered to determine the influence of a 30-min. smoking environment on the amount of carbon monoxide in the blood. Cigarette smoke in a poorly ventilated enclosure significantly increased nonsmoking children's heart rate, systolic and diastolic blood pressure, and amount of carbon monoxide in the blood, similar to the effect upon the smoker but on a reduced scale. Nonsmoking children from nonsmoking homes reacted in much the same manner to a cigarette smoking environment as did nonsmoking children from smoking homes, while boys were affected in much the same manner as girls when exposed to a cigarette smoking environment.

686. WANAMAKER, George S. *A study of the validity and reliability of the twelve-minute run under selected motivational conditions.* Ph.D., 1969. 104 p. (C. W. Landiss)

College students, 48 volunteers and 48 class Ss, were each randomly assigned to take a 12-min. run test as individuals and with a group. S was administered a maximum oxygen intake test by using a Versatronics extended range oxygen computer. Ss were administered the 12-min. run test 3 times; twice individually and once with a group or vice versa, with 3- to 4-day intervals between tests. The 12-min. run was not an effective predictor of maximum intake when administered under the conditions of the study; however, the run was considered a reliable measure. The social facilitation (running in groups) and the conditions under which the run was administered (volunteers or class Ss) were not effective in producing significantly different performances.

Texas Woman's University, Denton, Texas (A. S. Duggan)

687. BOTTGER, Joan. *The relationship between the percentage of buccal cell nuclei containing Barr bodies and the psychological masculinity-femininity indexes of freshman and sophomore college women.* Ph.D. in Physical Education, 1970. (B. Myers)

Psychological femininity was ascertained by the M scale of the GZTS, the Mf scale of the MMPI, and a composite femininity evaluation obtained

from the 2 psychological instruments. The sex chromatin data were secured from the buccal smear test and the modified Guard staining technique. A 100-cell assessment of each buccal smear specimen was conducted at 970x. The results were recorded in relation to the percentage of central, peripheral, and total sex chromatin positive cells. No significant relationships were noted between the percentage of central, peripheral, or total buccal cell nuclei containing Barr bodies and psychological femininity evaluation. Significant correlations were not obtained between the percentage of central or peripheral buccal cell nuclei and psychological femininity as measured by the MMPI. A low significant ($P < .05$) correlation of .21 was achieved between the total percentage of buccal cell nuclei containing Barr bodies and psychological femininity as assessed by the MMPI.

688. BROWN, Elsie Johnson. *The history and development of the University of Dance at Jacob's Pillow in Lee, Massachusetts, from its inception in 1931 through the summer session of 1967.* M.A. in Dance and Related Arts, 1969. 585 p. (A.S. Duggan)

The present study was undertaken to prepare a written account of the history and development of the University of the Dance at Jacob's Pillow, Lee, Massachusetts, and to describe the nature and scope of its influence upon dance in education and upon dance as an art form. Wherever available, data were collected from persons affiliated with the University of the Dance at Jacob's Pillow, either directly or indirectly, throughout the various periods of its development; from the personal and professional files of Ted Shawn, founder and director of this unique institution; and from the professional files of the University of the Dance at Jacob's Pillow. The data collected were both human and documentary in nature, pertinent to all aspects of the study. Methods of collecting data were documentary analysis, personal interviews, and correspondence.

689. BROWN, Marcia Gail. *The development of a park recreation program for the mentally retarded at the Denton State School, Denton, Texas.* M.A. in Therapeutic Recreation, 1969. 106 p. (J. Rosentswieg)

The program developed included a schedule for the use of the park by the profoundly and severely retarded residents, as well as for the moderately and mildly retarded. The uses of the facilities in the park and their therapeutic aspects were described and variations in the use of the equipment for the different intelligence levels were discussed. Included in the park program were potential uses of the facility by the blind and semi-ambulatory residents.

690. BRUNA, June Ortiz. *A descriptive study of four selected ethnic dances of the Alaskan Eskimo domiciled in Kotzebue, Alaska.* M.A. in Dance and Related Arts, 1969. 136 p. (A.S. Duggan)

The dances were discussed with respect to the reciprocal relationships which exist between geographical, historical, and sociological factors. The 4 dances reflect the influences of the sea, the arctic climate, and the plant and animal life indigenous to the area of Kotzebue, Alaska. They are associated with 2 important festivals which are based upon the hunting calendar of the primitive society. Dances I and II are associated

with the now extinct winter "Messenger Feast," and reflect the hunting upon the ice for sea mammals. Dances III and IV are associated with the "Spring Whaling Festival," and reflect the hunting of the whale upon the open waters. Each of these dances was described with respect to thematic content; number, age, and sex of dancers; costumes; accompaniment; basic movement motifs; and the use of floor space.

691. CORBITT, Shirley A. *Criteria for grading women students in the required program of physical education at the college/university level.* Ph.D. in Physical Education, 1969. 191 p. (B. Myers)

Data were collected from 3 sources: published materials, a jury of experts representing authorities in the field of PE, and a panel of academic deans representing public and private institutions of all sizes all over the country. An opinionnaire, developed by the investigator, was comprised of 3 major sections: general philosophical statements concerning PE and grading, a chart for weighing the factors included in the final grade, and space for suggesting techniques for evaluating each factor to be included in the final grade. Thirteen basic criteria and their implications were established as guide lines for determining women students' grades in a required college or university PE program.

692. DAVILA, Rebecca Tober. *The development and evaluation of a pictorial health information test for first grade pupils.* M.A. in Health Education, 1969. 136 p. (C. Sherrill)

A pictorial health information test for first grade pupils was constructed from scientifically established health concepts. Statistical treatment of the data obtained through the administration of a preliminary form of the test to 100 students resulted in the development of a refined final test form comprised of 30 multiple-choice items which depicted right and wrong health practices through black and white line drawings. The final test forms were administered by classroom teachers to a total of 1,600 first grade pupils in public schools of 22 randomly selected counties in Texas. The raw scores for the students ranged from 6 to 30 with a mean of 19.08, an SD of 4.47, and an SE of .112. The reliability coefficient for the test, as computed by the Kuder-Richardson Formula, was .68.

693. FAULKNER, Thelma Ray. *The relative effectiveness of two approaches to the teaching of movement for the actor.* Ph.D. in Dance and Related Arts, 1969. (F. J. Myers)

One approach was devoted to instruction in mime and improvisations which permitted the use of the spoken word. The other approach was devoted to instruction in selected movement techniques and improvisations which were nonverbal in nature. Fourteen undergraduate students who registered for a course in beginning acting were divided randomly into 2 equal groups. They were exposed alternately to both approaches for a period of 6 weeks. Their acting performance was evaluated by selected judges at the mid-point and at the conclusion of each period of 6 weeks, for a total of 4 evaluations. There was no significant difference in the mean scores of either group at the mid-point of the first instructional period, at the end of the first instructional period, or at the completion of the second instructional period. A significant difference between the mean

scores of the groups was revealed, however, at the mid-point of the second instructional period.

694. FERGUSON, Claudia. *The effect of two competitive motivational conditions upon the improvement of rifle shooting scores.* M.A. in Physical Education, 1969. 87 p. (B. Myers)

Twenty students enrolled in a beginning rifle shooting class were assigned to one of 2 competitive, motivational groups: team competition or student-set level of aspiration with a change in shooting positions according to their mean average score accumulated during the first phase of the study. Significant differences were found between the initial and mid-point scores for the student-set level of aspiration group. No significant differences were found between the 2 motivational groups during the initial to final interval or from the mid-point to final interval. Significant improvement was evidenced by those students who consistently set attainable goals during the initial to mid-point interval, whereas those who consistently set their goals lower than demonstrated score achievement did not show significant improvement in their rifle shooting scores.

695. GARRISON, Roberta Ann. *The study of the relationship between certain traits of laterality and the take-off foot in selected skills of locomotion.* M.A. in Physical Education, 1969. (B. E. Lyle)

Relationships investigated were between: hand dominance and the take-off foot in selected skills of locomotion; eye dominance and the take-off foot in selected skills of locomotion; foot dominance and the take-off foot in selected skills of locomotion; and hand dominance and eye dominance, hand dominance and foot dominance, and eye dominance and foot dominance. The Harris Tests of Lateral Dominance, the Garrison Tests for Laterality, and a take-off test were administered to 70 seventh grade boys. Validity and reliability were established for the latter 2 tests, which were original and developed by the investigator. ANOVA method revealed no significant differences between: hand dominance and take-off foot, eye dominance and take-off foot, and foot dominance and take-off foot. The findings revealed that relationships exist between hand and eye laterality, hand and foot laterality, and eye and foot laterality. Details were presented concerning selected skills and their relationships with laterality.

696. HAMMETT, Linda Jean. *The incidence of injury among women participating in national basketball and track and field and Texas State tennis competition during 1969.* M.A. in Physical Education, 1969. 51 p. (B. E. Lyle)

An Analysis of Injury Chart was constructed for the collection of data used in the investigation. The teams were selected for participation in the study in the specific sports tournaments, and the charts distributed to each of the participants. Determined were the actual number of injuries sustained in each of the foregoing sports; the percentage of each type of injury in relation to the number of participants and the number of reported injuries in each sport; and the most frequent type of injury and its relationship to specific sports and anatomical areas of the body.

697. LeFEVERS, Victoria A. *The relationship between ordinal position in the family and agility, balance, flexibility, power, and strength of college women.* M.A. in Physical Education, 1969. 78 pp. (J. Rosentswieg)

Undergraduate women students (N=258) were divided into groups with respect to their ordinal position in the family. Motor ability tests were selected from a battery developed by Fleishman. It was found that there were no significant differences and/or relationships between ordinal position and the selected factors of agility, balance, flexibility, power, and strength. Ordinal position was not a significant variable in determining the scores of women of university age upon selected tests of motor ability.

698. LEWIS, Sara Jacquetta. *The development and evaluation of an information test in beginning modern dance for undergraduate college students.* M.A. in Dance and Related Arts, 1969. 120 p. (F. J. Myers)

Students from selected colleges and universities were Ss. A course outline, which was developed by the investigator, served as the basis for construction of the information test. Objectivity of the test was established through the careful construction of multiple-choice statements followed by 4 alternative answers. The curricular validity of the test was determined through the evaluation of each test item by the members of a panel of experts. The reliability coefficient determined from scores obtained from the odd and even numbered items of the test, as corrected by the use of the Spearman-Brown prophecy formula, was .99. Twenty-six of the test items were considered to be a satisfactory device for determining the extent of information acquired by undergraduate college students during a one-semester course in beginning modern dance.

699. LONDOW, Mattie Scott. *The relationship between the self-report of elementary school children and their achievement in reading and selected motor skills.* Ph.D. in Physical Education, 1969. 147 p. (C. Sherrill)

The relationship of reading achievement and selected motor skills performance among 236 third grade boys and girls who were classified as having high, medium, and low self-reports was determined. The instruments employed in collecting the data were Gordon's "How I See Myself Scale," the Primary II Battery of the Stanford Achievement Test, and 4 tests from Johnson's Motor Achievement Battery. There was a significant multiple relationship between self-report, components of reading, and selected motor skills for third grade girls, but not for third grade boys; there seemed to be an interrelationship between components of reading and level of self-report; and there was no observable interrelationship between level of self-report and performance in selected motor skills.

700. MARSHALL, Katie Grant. *The relationship between participation in a program of planned aquatic activities and changes in the self-concept of children with orthopedic limitations.* Ph.D. in Physical Education, 1969. 316 p. (C. Sherrill)

A positive relationship was found to exist between participation in 60 sessions of aquatics activities and changes in self-concept of 10 orthopedically handicapped children, ages 8 through 12. Data concerning

changes in self-concept and in swimming proficiency were collected through the case study method and initial and final administrations of a semantic differential test, the Piers and Harris "The Way I Feel About Myself Inventory," and the Coopersmith "Self-Esteem Inventory."

701. MARTIN, Vicki. *An historical study of six selected ethnological dances from the Pacific Islands of Samoa and Hawaii.* M.A. in Dance and Related Arts, 1970. (A.S. Duggan)

The dances were described with respect to reciprocal relationships based upon such background material as social structure, religion, history, and geography. The 2 Samoan dances are "Lapalapa," which is performed by both sexes, and the "Samoan Sword Dance," which is performed by men only. The 4 Hawaiian dances reflect a cross-section of music and characteristic themes of the Hawaiian culture. "Ka Pi A Pa" is a rhythmic device for teaching the Hawaiian alphabet comprised of 12 letters; "Pupu Hinuhinu" is a lullaby; "Ula No Weo" is a dance accompanied by a traditional chant extolling the beauties of Cape Nohili; and "Beyond the Reef" is a dance accompanied by a modern Hawaiian song in English. Each of these dances was described with respect to the number of dancers, structure, formation, basic movement motifs, accompaniment, costumes, and special occasions on which the dances have been and are now performed.

702. MARTINEZ, Sanjuanita. *Textural Perceptions: A suite of seven original modern dance compositions associated with seven selected fabrics.* M.A. in Dance and Related Arts, 1969. 169 p. (A.S. Duggan)

The accompaniment for *Textural Perceptions* was selected from previously composed music of various composers in accordance with the thematic content, the rhythmic structure, the tempo, the dynamics, and the phrasing of each of the seven modern dance compositions choreographed. The narration, which described the characteristics of the specific fabric upon which each dance was based, was utilized as a traditional, unifying device for the 7 separate dance compositions into a suite as a whole. The title of each of the 7 modern dance compositions comprising the suite entitled *Textural Perceptions* was: "Denim," illustrating a utilitarian fabric with a rugged surface contour quality; "Chiffon," illustrating a flowing, sheer fabric; "Taffeta," illustrating a smooth, crisp fabric with a rustling sound when it is moved; "Velvet," illustrating a soft, drapable fabric with a compressible quality; "Patent Leather," illustrating a glossy, shiny fabric; "Tubular Cotton-Elastic," illustrating an extensible fabric with a stretch and recovery nature; and "Crinoline," illustrating a crisp, stiff fabric lacking any degree of compressibility.

703. McMURTREY, Jeannine. *A survey of the status of physical education teachers in the public schools of Texas as related to number, sex, subjects taught, and the levels of instruction.* M.A. in Physical Education, 1969. (B.E. Lyle)

Information was sought concerning the number and sex of teachers of PE and HE, their levels of instructional responsibility, additional subject matter areas taught by these teachers, the number of annual replacements required, the yearly demand for college graduates, the number of super-

visory personnel, and the requirements for the special area of adapted PE. The investigation entailed a survey of the 1,278 public school districts in Texas. A questionnaire was constructed and mailed to the superintendents of each of these school districts and 53% of the questionnaires were returned. Ratios were reported for the information which was sought.

704. PACK, Margaret E. *A comparison of the use of four specific defense mechanisms among college women athletes and nonathletes.* M.A. in Physical Education, 1969. 80 p. (J. Rosentswieg)

Twenty-four nonathletes and 24 athletes from the varsity sports of swimming, basketball, and tennis participated to determine if significant differences existed in the use of the defense mechanisms of rationalization, projection, unreality, and withdrawal. The Emo Questionnaire was administered following final examinations as this was considered a stress period. A comparison was made between the groups in relation to frequency of choice and intensity of choice scores by application of ANOVA. Significant differences were not found in the use of the 4 defense mechanisms among college women athletes and nonathletes. Similar findings were noted in the use of unreality, projection, and withdrawal among team sport and individual sports participants. Significant differences were obtained in the use of rationalization among team and invidual sports participants.

705. SCHROEDER, Lynette Adair. *Current status and trends of interscholastic athletics for senior high school girls in Texas public schools.* M.A. in Physical Education, 1969. 149 p. (B.E. Lyle)

The purpose of this study was to ascertain the status of school and individual participation in girls' interscholastic athletics in public SHSs in Texas, and to determine any trends related to athletic activities during the academic year of 1967-68 and that of 10 years ago. A questionnaire was constructed and mailed to directors of girls' PE and athletics, selected by means of a random sampling, from 503 schools in Texas representing each of the University Interscholastic League Districts and Conferences. A total of 57% of the questionnaires was returned. Percentages were computed and converted into tabular forms for the interpretations of the results of the investigation.

706. SCOTT, Charlotte. *A quantitative electromyographic study of the trapezius during selected exercises designed to ameliorate the postural deviation designated as round shoulders.* Ph.D. in Physical Education, 1969. (J. Rosentswieg)

Twenty-one female volunteer Ss evenly divided among elementary, secondary, and university age levels served as Ss for a comparative study in which quantitative surface electromyography was used to rank selected exercises that are recommended by authorities for the amelioration of the postural deviation of round shoulders. Specifically, the following hypotheses were tested: There is no significant difference in the muscle action potential of selected postural exercises which purport to strengthen the trapezius muscle as measured by quantitative electromyography. This hypothesis was rejected, as Duncan's Multiple Range Test demonstrated that there was a significant difference ($P < .05$) among many

of the exercises and at each age level and for the combined groups. There is no significant difference among Ss of various age levels in the muscle action potential of the selected postural exercises as measured by quantitative electromyography. This hypothesis was accepted, as Kendall's coefficient of concordance was significant ($P < .01$) among the different age groups which ranked the 12 selected exercises.

707. THOMAS, Amilda Ellis. *Changes in selected traits of freshman major students after participation in a self-development program in the College of Health, Physical Education, and Recreation at the Texas Woman's University in Denton, Texas.* Ph.D. in Physical Education, 1969. 313 p. (A. S. Duggan)

Freshman women major students (N=46) organized into 2 equal groups served as Ss to determine the differences between participation and nonparticipation in a planned program of self-development concentrated within a 6-month period. Differences between the groups were based upon changes with respect to the traits of general information, temperament, expressed attitudes toward teacher-pupil relationships, expressed interests characteristic of women in PE, vocabulary, reading comprehension, and reading rate as measured by the following instruments: Duggan's General Information Test, the Guilford-Zimmerman Temperament Survey, the Minnesota Teacher Attitude Inventory, the Strong Vocational Interest Blank for Women, and the Nelson-Denny Reading Test. The battery of tests was administered at the beginning and at the end of the experimental period. Ss who participated in the planned program were better informed in the areas of literature and drama, and of sports, 2 of the areas in Duggan's General Information Test, and possessed better reading comprehension, one of the traits measured by the Nelson-Denny Reading Test, than Ss who did not participate in the planned program.

708. THOMAS, Earnestine. *Teaching for ambidexterity and unilaterality in basketball skills for fifth grade students.* M.A. in Physical Education, 1969. 96 p. (C. Sherrill)

The dribbling, shooting, and passing skills of children taught to use the dominant hand only and children taught to use both hands equally during a basketball unit were examined. Ss were 42 fifth grade students, divided into a control and an experimental group, and equated with respect to age, sex, and fundamental basketball skills. Data were collected through initial and final administrations of 5 standardized tests of basketball skill. With the exception of scores on the half-minute shooting test for the left hand, no significant differences were found in the basketball skills of the 2 groups after 12 weeks of daily instruction.

709. THOMPSON, Judy Kay. *A study of the relationship between reading skills and selected components of physical fitness among first grade children.* M.A. in Physical Education, 1969. 62 p. (J. Rosentswieg)

The purpose of the study was to determine the relationship between reading skills, as measured by the Metropolitan Readiness Test, and selected components of physical fitness, as measured by the Elementary School Physical Fitness Test, of 88 first grade children. The results of ANOVA

indicated that there was no significant difference ($P < .01$) for either sex with respect to any of the selected fitness components. The correlations for achievement in reading and fitness indicated a small positive relationship. It was inferred that a person's readiness to read is not reflected in any measurable way by any of the selected components of physical fitness.

710. WALTON, Judith. *A study of the relationship between the ability to learn selected gross motor skills in tennis and the ability to control muscular tension consciously.* M.S. in Physical Education, 1969. 89 p. (J. Rosentswieg)

Eighteen women with no previous formal experience in racket sports were taught selected gross motor skills in tennis. Ss were measured by means of quantitative electromyography for their ability to relax the muscular tension of the biceps brachii. The following hypotheses were tested: there is no significant relationship between the ability to efficiently learn selected motor skills in tennis and the ability to relax consciously the muscular tension of selected forearm flexors; there is no significant relationship between the ability to successfully compete in tennis singles and the ability to relax consciously the muscular tension of selected forearm flexors; and there is no significant relationship between the ability to efficiently learn selected tennis skills and the ability to successfully compete in tennis competition. The first 2 hypotheses were accepted, and the third was rejected. The more efficient learners were not able to relax muscular tension to a greater degree than were their less efficient counterparts.

711. WILLIAM, Ann. *Agnus Dei: A suite of three original modern dance compositions based upon selected parts of the Roman Catholic mass.* M.A. in Dance and Related Arts, 1968. 189 p. (A.S. Duggan)

The accompaniment for *Agnus Dei* was selected and composed in accordance with the thematic content, the rhythmic structure, the tempo, the dynamics, and the phrasing of each of the 3 modern dance compositions choreographed. The narration, which was written by the investigator as a series of prose-poems, was utilized as a transitional device for unifying the separate dance compositions into a suite as a whole. The suite was structured as a group of parts indicated by the letters ABC. The titles of the modern dance compositions comprising the suite were: "The Offertory," depicting the offering of oneself to God in the form of Bread and Wine; "The Consecration," depicting Transubstantiation, in which the substance of the Bread becomes the substance of the Body of Christ and the substance of the Wine becomes the substance of His Blood; and "The Communion," depicting the receiving of the Lord in the form of Bread and Wine.

712. WORTHY, Terry. *A study of the relationship between selected physical education activities and changes in cardiovascular endurance as determined by the postexercise pulse rate count.* M.A. in Dance and Related Arts, 1969. 42 p. (R.V. Ganslen)

College women (N=68) enrolled in swimming, tennis, and modern dance classes were tested on the Hodgins-Skubic Cardiovascular Endurance Test prior to, at the mid-point, and at the completion of the semester

during which the investigation was conducted. The Ss enrolled in swimming and tennis did not make significant gains in cardiovascular efficiency scores; Ss enrolled in modern dance made significant gains in cardiovascular efficiency scores at the mid-point of the semester but did not retain these significant gains at the final testing period; and the group comprised of modern dance students showed significantly lower recovery pulse rate scores on the mid-point test than any of the other groups.

University of Toledo, Toledo, Ohio (J. N. Drowatzky)

713. BENCH, Douglas. *The pain- and fatigue-suppressing effect of auditory stimuli on maximal physical performances.* M.Ed. in Physical Education, 1969. 50 p. (D. C. Stolberg)

Male SHS Ss (N=51) were divided randomly into 3 groups and given an exhaustive bicycle ergometer ride under increasing work loads. The control group heard no sound while exercising. Experimental Group I listened to white sound with a faint musical background through headphones while exercising, whereas Experimental Group II exercised to the accompaniment of stereo music that expressed a dominant beat. Heart rate as well as exercise time to exhaustion was measured. The control group's mean exercise time to exhaustion was 260.5 sec.; Experimental Group I, 270.4 sec.; and Experimental Group II, 296.6 sec. ANOVA revealed no significant differences ($P > .05$). Although the music group consistently experienced a lower heart rate than the other groups in the submaximal phase of exercise, these differences were not significant. Responses to a post-test questionnaire indicated significant differences ($P < .001$) with respect to groups' enjoyment of the exercise task and their willingness to repeat a similar experience.

714. BENSCH, Ann Stacy. *Attitudes of high school boys and girls toward physical education.* M.E. in Physical Education, 1969. 60 p. (J. N. Drowatzky)

Male and female SHS Ss (N=1,100) participated in this study. Three groups were formed of 100 each: an experimental group of Ss enrolled in the required program, a group who had elected to take PE, and a control group who were in study hall sometime during the day. The primary purpose of the study was to determine whether exposure to activities conducted in a well-taught PE program would have a positive effect on attitude changes. A modified Wear Attitude Inventory was administered twice: the first day of PE class in the fall, and the final test during the last week of the first semester. ANOVA indicated significant differences between the means on the initial and final attitude tests. The New Duncan Multiple Range test indicated the mean of the elective group was significantly more favorable than those of the other 2 groups. A similar analysis for the final mean attitudes showed all 3 groups were significantly different. A t ratio of 3.42 indicated significant improvement of the attitudes of the elective group, while the other 2 groups did not show significant improvement.

715. FLEISCHMAN, Terry Lee. *The effects of two different intensities of short duration muscular exercise on the renal excretion of uric acid.* M.Ed. in Health, 1969. 100 p. (J. J. Burt)

Each of 4 male graduate Ss ran one mile in 7.5 min. on a motor-driven treadmill on each of 4 different days. Two of the runs by each S were performed at a 2.5% grade, and the other two at a 5.5% grade. Urine samples were collected on the experimental days and on control days and analyzed spectrophotometrically for uric acid. The rates of excretion of uric acid were initially depressed by the exercises — more so in response to the 5.5% grade than at the 2.5% grade — and then increased to unusually high values later in the postexercise periods. One of the Ss was less fit than the other 3 Ss, and he demonstrated patterns of uric acid excretion after running at the 2.5% grade that were similar to the patterns exhibited by the other Ss at the 5.5% grade. Chi-square analysis revealed that the changes in uric acid excretion on the control days, but not on the experimental days, were dependent upon the simultaneous changes in urine formation rate ($P < .01$). This dependence was especially strong at low rates of urine formation.

716. HICKS, Charles D., Jr. *An evaluation of the Barach index as a measure of cardiorespiratory fitness.* M.Ed. in Physical Education, 1969. 76 p. (D. E. Cundiff)

The purposes of this study were to evaluate the Barach Index as a measure of cardiorespiratory fitness as well as interrelationships between the Barach Index, percent body fat, resting heart rate, and physical working capacity. Male volunteers (N=55) served as Ss and were measured for the factors mentioned above. Findings indicated a weak but significantly negative relationship between physical working capacity and the Barach Index; a weak but significantly negative association between physical working capacity and percent fat; a weak but significantly positive relationship between percent body fat and resting heart rate; and no relationship between percent body fat and the Barach Index.

717. MARLEY, William P. *A study of resting platelet count and physical fitness level.* Ph.D. in Physical Education, 1969. 61 p. (J. J. Burt)

Platelet counts and Harvard Step Test scores were obtained from 102 male college Ss. Following a 5-min. rest period a fingertip blood sample was obtained and the platelet count determined by means of the Brecher-Cronkite method. The testing period was concluded with a step test taken in a controlled environment room. A correlation was calculated for the resting platelet counts and fitness scores and found to be significant ($P < .05$). It was shown, however, to lack predictive power. A subsequent test for linearity, i.e., eta, failed to achieve significance. Ss were then sorted into high, moderate, and low fitness groups on the basis of their step test scores. ANOVA revealed no difference between the groups. Finally, a *t* test was performed between the platelet counts of the extremes of the fitness distribution. No difference was revealed.

718. SCHWARTZ, Robert Michael. *The effects of various degrees of muscular work upon depth perception.* M.Ed. in Physical Education, 1968. 43 p. (J. N. Drowatzky)

Thirty male college Ss were placed in 2 groups to discover if varying degrees of general muscular fatigue had any effect on depth perception. The experimental group pedalled a bicycle ergometer under conditions of increasing work loads until a heart rate of 170 beats/min. was reached, or until unable to pedal as required. The depth perception scores and heart rate were recorded simultaneously at preselected times during the experimental period. All Ss in the experimental group were actively exercising during the time these data were collected. The data from the control group were collected following the same procedure except that they did not perform any physical work. ANOVA indicated no significant differences between the depth perception scores of the experimental and control groups; no significant changes in depth perception scores occurred during the experimental period, and no significant interaction effect. These findings were confirmed by the paired *t* test that indicated no significant differences between the initial and final depth perception scores of either group.

University of Utah, Salt Lake City, Utah (L. E. Griffin)

719. AHONE, Keith John. *A survey of the utilization of school facilities for community recreation.* M.S. in Recreation, 1968. 90 p. (B. H. West)

720. ALGER, Ned R. *A survey of fund-raising methods for intercollegiate athletics in the Western Athletic Conference.* Ed.D. in Physical Education, 1969. 135 p. (O. N. Hunter)

721. BELLEFEUILLE, Gloria Jean. *A survey of attitudes of secondary school women physical education teachers in the State of Utah toward interscholastic competition for girls.* M.S. in Physical Education, 1969. 68 p. (L. E. Griffin)

722. BOREN, Ronald L. *A score card for the evaluation of recreation programs in industrial institutions.* M.S. in Recreation, 1969. 57 p. (J. Squires)

723. BRACKEN, Wilma June. *Investigation to determine the factors which deter the pregnant woman from initiating prenatal care during the first trimester of pregnancy.* M.S. in Health Education, 1968. 80 p. (B. R. Moss)

724. BROWN, Edward Albert. *A comparative study of personality traits of varsity skiers, varsity wrestlers, varsity swimmers, and collegiate nonathletes at selected institutions of higher learning in the intermountain area.* Ed.D. in Physical Education, 1969. 149 p. (O. N. Hunter)

725. CALKINS, Keith. *A survey of employment tendencies of physical education graduates from five selected Northern California state colleges.* Ed.D. in Physical Education, 1968. 226 p. (O. N. Hunter)

726. CARTER, Myron K. *The effects of selected nonprescriptive drugs on specific psychophysical driving skills.* Ph.D. in Health Education, 1969. 298 p. (N. E. Randall)

727. DAYTON, Norma Marie. *An investigation of the aims and objectives of the American Association for Health, Physical Education, and Recreation from 1930 to 1968.* Ph.D. in Physical Education, 1969. 197 p. (B. H. West)

728. DEHOYOS, Benjamin Federico. *Social class differentials in community recreational wants.* Ph.D. in Recreation, 1969. 130 p. (J. Squires)

729. DRAAYER, Jon Kent. *An evaluation of the physical education program for boys in the Davis County.* M.S. in Physical Education, 1969. 65 p. (O. N. Hunter)

730. DUFFIN, Daryl. *A therapeutic recreation program for emotionally disturbed children.* M.S. in Recreation, 1968. (O. N. Hunter)

731. EVANS, Gary F. *An evaluation of the graduate professional preparation program in health, physical education, and recreation at the University of Utah, based on a follow-up study of its graduates.* Ed.D. in Physical Education, 1968. 293 p. (O. N. Hunter)

732. FARRELL, Thomas Henry. *A history of interscholastic athletics at Santa Maria Union High School.* M.S. in Physical Education, 1969. 146 p. (O. N. Hunter)

733. FLITTON, Winton Michael. *A survey of the usage and effectiveness of a physical education guide for junior high school boys.* M.S. in Physical Education, 1969. 84 p. (L. E. Griffin)

734. FORREST, Meredith Ann. *The relationship between health knowledge and practice in selected college students.* M.S. in Health Education, 1968. 88 p. (B. R. Moss)

735. GARIBALDI, Michael Stephen. *A historical study of water polo.* M.S. in Physical Education, 1969. 120 p. (A. Shoman)

736. GRIENER, Kenneth Cecil. *An opinion of the value of interscholastic athletics in Granite School District high schools.* M.S. in Physical Education, 1969. 61 p. (O. N. Hunter)

737. HALE, Ralph. *A survey of the opinions of the junior high school principals in Granite and Salt Lake Districts on junior high school interscholastic athletics.* M.S. in Physical Education, 1968. 57 p. (L. E. Griffin)

738. HAFEN, William J. *Administrative guide lines for the cooperative use of public school facilities for recreation purposes by community groups in the State of Utah.* Ed.D. in Recreation, 1968. 226 p. (J. Squires)

739. HEINER, Steven Warner. *The relationship of sex knowledge of freshman students at the University of Utah to selected variables.* Ed.D. in Health Education, 1969. 137 p. (O. N. Hunter)

740. HERGERT, Loretta Jean. *An exploratory study of attitudes toward physical activity as expressed by university students.* Ph.D. in Physical Education, 1969. 105 p. (O. N. Hunter)

741. HERRON, Larry Gene. *A survey to compare the educational preparation, related experience, and selected duties of collegiate athletic directors.* Ph.D. in Physical Education, 1969. 222 p. (L. E. Griffin)

742. HODOWAY, Stephen Brinkman. *A survey to determine the current smoking status of sixth, ninth, and twelfth grade students in selected schools of the Salt Lake City and Granite School Districts.* M.S. in Health Education, 1969. 55 p. (C. O. Ness)

743. HOFF, Donald Joseph. *A comparison between videotape and conventional methods of instruction in bowling.* Ed.D. in Physical Education, 1969. 157 p. (O. N. Hunter)

744. JOHNSON, Charles Ronald. *A comparative study to determine the relationship between range of movement at the elbow joint and success in selected skills in gymnastics.* Ed.D. in Physical Education, 1969. 66 p. (O. N. Hunter)

745. KAY, Richard Sharon. *A comparative investigation of competitive athletic team members, nonteam members at the junior high school level, and the results of selected tests in physical fitness, scholastic achievement, and IQ.* M.S. in Physical Education, 1969. 67 p. (L. E. Griffin)

746. LARSON, Nancy H. *Postexercise urinary creatine-creatinine as a function of the duration of heavy exercise.* M.S. in Physical Education, 1968. 68 p. (A. Gustafson)

747. LEE, M. Gene. *A study of the formal education of selected University of Utah football and basketball athletes receiving full grants-in-aid.* Ed.D. in Physical Education, 1969. 142 p. (L. E. Griffin)

748. LESCH, Victor Ray. *A comparative study to determine the effectiveness of videotape replay as an adjunct in teaching selected gymnastics skills.* Ed.D. in Physical Education, 1969. 122 p. (O. N. Hunter)

749. LOVAT, David Thomas. *A comparative study of grade-point average of male junior and senior varsity lettermen and nonathletes of Hillcrest High School.* M.S. in Physical Education, 1968. 48 p. (O. N. Hunter)

750. LUCERO, Rudy E. *A study of Bonneville High School students and the interrelationship of their scholastic performance, automobile usage, and employment.* M.S. in Physical Education, 1969. 37 p. (L. E. Griffin)

751. MARTIN, Margery Mae. *A comparative study of selected psychosocial characteristics of major students in selected subject areas using the dogmatism scale and the acceptance of self and others inventory.* Ph.D. in Physical Education, 1969. 80 p. (O. N. Hunter)

752. MAXWELL, Lawrence Quinton. *The history of interscholastic athletics at Highland High School.* M.S. in Physical Education, 1969. 108 p. (A. Simone)

753. MCKILLIP, Donald Joseph. *A financial study of single platoon football compared with two-platoon football at selected institutions during the years 1950 through 1968.* Ed.D. in Physical Education, 1969. 66 p. (O. N. Hunter)

754. MORRIS, William McKinley. *The effects of isometric and isotonic weight training exercises upon quadricep strength and performance in a middle distance running event.* Ed.D. in Physical Education, 1969. 186 p. (O. N. Hunter)

755. NALDER, Lanny J. *The relation of carbon dioxide output, change in pH, and heart rate among cross-country runners at 6.5 miles per hour at 15 percent gradient until exhausted.* Ph.D. in Physical Education, 1969. 117 p. (A. Gustafson)

756. NELLESTEIN, Alice Anne. *The intramural program for girls in the high schools of Utah.* M.S. in Physical Education, 1969. 37 p. (B. H. West)

757. NICHOLES, Gary E. *A profile investigation of recreation vehicle travelers who use government and commercial parking facilities.* M.S. in Recreation, 1968. 179 p. (J. Squires)

758. PINK, Ralph Joseph. *A survey to determine the current status of intramural-recreational programs for men in selected United States colleges and universities.* Ed.D. in Physical Education, 1969. 273 p. (O. N. Hunter)

759. PINO, John E. *The comparative grade-point analysis of athletes during a competitive sport with their academic record when not in competition at Highland High School.* M.S. in Physical Education, 1968. 63 p. (O. N. Hunter)

760. PRESCOTT, Roger L. *A comparative study of a high and a low physical fitness group at Drake University.* Ph.D. in Physical Education, 1968. 119 p. (O. N. Hunter)

761. REEDER, Alan F. *The relationship of socioeconomic status and leisure pursuits during retirement.* M.S. in Recreation, 1968. 87 p. (J. Squires)

762. REES, Janet Sanborn. *A comparative study of the reactions of high-, middle-, and low-anxious individuals to exertion using the Taylor manifest anxiety scale and selected physiologic parameters.* Ph.D. in Physical Education, 1969. 120 p. (A. Gustafson)

763. RICCIO, Dennis. *A comparative study of personality trait difference between tenth, eleventh, and twelfth grade wrestlers and nonathletes at the same grade levels.* M.S. in Physical Education, 1969. 38 p. (A. Gustafson)

764. RICHARDS, Elmer L. *An historical investigation of interscholastic athletics at East High School, Salt Lake City, Utah.* M.S. in Physical Education, 1968. 193 p. (O. N. Hunter)

765. ROBB, Gary Max. *A profile investigation of single unit executive directors of Boys' Clubs of America.* M.S. in Recreation, 1968. 90 p. (J. Squires)

766. ROGERS, James Harvey. *A comparative study of baseball deflection between horizontal bat bunting position and forty-five degree bat angle bunting position using videotape analysis.* Ph.D. in Physical Education, 1969. 63 p. (A. Gustafson)

767. SCHMIDT, Kenneth Robert. *A survey of time involvement in coaching as related to additional salary received by high school football coaches in Utah as compared with selected intermountain states.* M.S. in Physical Education, 1969. (O. N. Hunter)

768. SEDIVEC, Mathius Joseph. *The effects of a systematic training program on carbon dioxide production before, during, and after a fifteen-minute run on a treadmill.* M.S. in Physical Education, 1969. 60 p. (A. Gustafson)

769. SEVIER, Barbara Ann. *A comparative electromyographic analysis of three abdominal muscles (rectus abdominis, internal oblique, and external oblique) while running and performing sit-ups.* Ph.D. in Physical Education, 1969. 136 p. (A. Gustafson)

770. SIMMONS, W. Darold. *The partic.pation of wrestling squad members in other interscholastic athletics according to weight class.* M.S. in Physical Education, 1968. 39 p. (M. Hess)

771. SOCHOR, James. *A survey of undergraduate programs of student personnel in physical education as conducted in selected colleges and universities.* Ed.D. in Physical Education, 1968. 131 p. (O. N. Hunter)

772. STEBEN, Ralph E. *A cinematographic study of selective factors in the pole vault.* Ph.D. in Physical Education, 1968. 142 p. (N. E. Randall)

773. THOMAS, Edward S. *Comparison of motor skill learning in throwing at a target using a baseball and a bean bag.* M.S. in Physical Education, 1968. 38 p. (L. E. Griffin)

774. THOMAS, Peggy S. *The relationship of physical fitness to selected aspects of intellectual and academic performance, co-curricular participation, and socioeconomic status.* Ed.D. in Physical Education, 1968. 126 p. (O. N. Hunter)

775. THORSTENSON, Clark T. *A study of the availability and the extent of use of public school facilities for community recreation in the State of Utah.* Ph.D. in Recreation, 1969. 392 p. (J. Squires)

776. TOMPKINS, Robert L. *A comparative study of divergent levels of physical fitness with reference to selected health factors.* Ed.D. in Physical Education, 1968. 156 p. (L. E. Griffin)

777. TOTLAND, Gary O. *A study of leisure participation and enjoyment of high school dropouts enrolled in the neighborhood youth corps.* M.S. in Recreation, 1968. 46 p. (J. Squires)

778. WALKER, Robert L. *An investigation of the athletic training practices of selected varsity coaches in Utah.* M.S. in Health Education, 1968. 69 p. (B. R. Moss)

779. WASKO, Douglas James. *An evaluation of the physical education programs for boys in selected Oregon high schools.* M.S. in Physical Education, 1969. 129 p. (L. E. Griffin)

780. WEIGHT, Ted Leon. *A survey of boys' intramural programs in the high schools of Utah.* M.S. in Physical Education, 1969. 70 p. (A. Simone)

781. WUNDERLI, John Richard, Jr. *A study to determine the relationship between predicted grade-point average and ability to learn a kip.* M.S. in Physical Education, 1969. 48 p. (B. West)

782. ZULALIAN, Ara. *A study to determine improvement of performance of the glide kip on a parallel bar through the use of loop film and television playback.* Ph.D. in Physical Education, 1969. 148 p. (N. E. Randall)

University of Washington, Seattle, Washington
(G. S. Reeves and M. R. Broer)

783. AHERN, Frank James. *The relative performances of male sophomore members of five ethnic groups in a selected track pentathlon test.* M.S. in Physical Education, 1969. 73 p. (C. A. Mills)
A comparison was made between the abilities of Chinese, Japanese, Negro, Jewish, and gentile Caucasian tenth grade males (N=783) at Franklin High School, Seattle, Washington, in the performance of a track pentathlon composed of the 100-yd. dash, running broad jump, shot-put, 440-yd. run, and high jump. Ethnic groupings were further subdivided into 15- and 16-year-old categories. In a composite for the pentathlon as a whole, each of the Negro groups was superior ($P < .001$) on these tests to any of the other ethnic categories. The 16-year-old gentile Caucasian group ranked higher than the 15-year-old gentile Caucasians. There was no significant difference between the 15- and 16-year-old scores of any other ethnic group. In ranking the different categories in the test, the Japanese group placed second to the Negro group. They were followed in order by the gentile Caucasians, Chinese, and Jewish groups.

784. BENNETT, M. Jeanine. *The effect of three instructional approaches to delivery on development of accuracy in bowling of high school girls.* M.S. in Physical Education, 1969. 59 p. (B. J. Purdy)
Data were obtained from 65 girls assigned to groups to be taught either the hook, straight, or straight and then later the hook ball delivery method. Instruction was the same for all groups except for the lane and hand position needed to develop the hook ball. Twenty games were bowled for scores. Total first ball pinfall was used to assess accuracy. Comparisons of first ball pinfall scores on the initial day, on the day prior to the straight-hook ball group progressing to the hook ball in the 7th game, for the average of the last 5 games bowled, and for the average of the last 2 games bowled indicated no significant differences among the groups. No significant improvement was found for any of the groups, nor were there differences among the groups' improvement.

785. CANNON, James W. *A survey of physical education programs for physically handicapped pupils in the public elementary schools of the State of Washington.* M.S., 1969. 198 p. (C. A. Mills)
Questionnaires were mailed to the 327 school districts of the state and responses were obtained from 223 districts, or 68%. Data were analyzed according to district enrollment figures. Only 1.5% of the pupils were reported as physically handicapped. Only 65% of the districts used a physical examination by a physician and 39% used physical fitness testing as a part of their health appraisal. Most districts placed most physically handicapped pupils in a PE program with nonhandicapped pupils. Only 8% of the districts reported adapted PE programs. In general, districts did not exempt physically handicapped pupils from PE except in some instances of severe disability.

786. CHILDS, Boyd M., Jr. *A history of the American Water Ski Association's organized activities in the Pacific Northwest to 1968.* M.S. in Physical Education, 1969. 290 p. (N. F. Kunde)

The historical method of research was used to determine the growth and development of the American Water Ski Association's organized activities in the Pacific Northwest prior to 1968. Included were people, sanctioned competitions, and major water skiing events since 1928 which have contributed to the growth and development of water skiing in the Pacific Northwest.

787. CONRY, Barbara Jane. *Effectiveness of the use of video tapes in learning beginning fencing.* M.S. in Physical Education, 1969. 65 p. (M. R. Broer)

Women (N=96) enrolled in 4 college beginning fencing classes received the same fencing instruction except that instruction of the 2 experimental classes was supplemented with use of video tapes. A questionnaire on previous fencing experience was administered to all Ss. Following the instructional unit a knowledge examination and a student evaluation questionnaire were administered to each class. An adaptation of the Bower test of general fencing ability was administered during final examination week. The investigator kept an activity log of the experimental classes' fencing participation during each class period. It was concluded that observation of skilled performance and of own performance on video tape did not seem to result in greater skill development or increased knowledge. However, the same level of skill can be developed in less actual physical practice time.

788. COX, Kenneth M. *An experiment in teaching complex motor skills to university freshman male students using continuous and discrete concept sequences with and without instant videotape replay.* Ed.D. in Education, 1969. 151 p. (F. P. Hunkins)

Investigated were 2 instructional strategies designed to teach complex motor skills to university freshman male Ss (N=140) with high and low physical achievement as measured by the AAHPER Physical Fitness Test A comparison was made of the effectiveness of continuous concept sequencing with and without instant videotape replay with that of discrete concept sequencing with and without instant videotape replay in regard to teaching complex motor skills related to college wrestling. Ss were equally divided into 4 wrestling classes. The length of the experiment was 11 weeks with each class meeting twice weekly for periods of 45 min. Ss were taught 75 complex motor skills. A $2\times2\times2$ factorial design was used. Ss taught by the continuous concept sequence strategy did not perform significantly differently from Ss taught by the discrete concept sequence strategy. Also, the use of instant video tape had no significant effect in stimulating Ss' learning of complex motor skills in wrestling. Further, results revealed the level of physical achievement to be significant in influencing performance. Specifically, the higher the achievement (ability) the more successful the performance in wrestling.

789. CLAYTON, Diane Elthea. *The relationships among attitudes toward physical activity, personality, and self-concept.* M.S. in Physical Education, 1969. 63 p. (B. J. Purdy)

Measuring instruments used were Bills's Index of Adjustment and Values, Cattell's Sixteen Personality Factor Test, and Kenyon's Attitude Toward Physical Activity Scales. Data were subjected to intercorrelation, multiple correlation and regression analysis, and partial correlation analysis. Several low but significant correlations were found between attitudes toward physical activity and some of the personality factors. None of the self-concept variables as measured by Bills's Index of Adjustment and Values correlated significantly with measures of attitudes toward physical activity. Significant correlations were found between some of the personality factors and 3 of the self-concept variables. Although many correlation coefficients were significant, none was high enough to be reliable for individual or group prediction.

790. DUKE, Robert A. *An analysis of reported injuries of junior high school students in the Bellevue Public Schools, Bellevue, Washington, from September 1965, to July 1967.* M.S. in Physical Education, 1969. 212 p. (G. S. Reeves and E. L. Hughes)

Analyzed were reported injuries to JHS students of the Bellevue Public Schools occurring over a period of 2 school years in relation to: sex and grade level of the injured; part of the body injured; extent and nature of the injury; and the month, location, and activity in which injury occurred, in order to improve the safety consciousness in the schools.

791. DUNCAN, Donald A. *A survey of facilities and current practices relative to the operation of selected municipal, school, institutional, agency, and club swimming pools in Pierce County, Washington.* M.S. in Physical Education, 1969. 241 p. (J. A. Torney)

Information was collected and organized that would be helpful in determining the present status of swimming pool design and facilities, and in ascertaining current policies and practices followed in the operation of selected municipal, school, institutional, agency, and club swimming pools in Pierce County, Washington. A questionnaire was submitted to the supervisors of 29 swimming pools, with a 100% return. The questionnaire covered the areas of pool design, operational equipment, aquatics programs, special services, maintenance, pool budget, liability insurance, joint operation, personnel, and salaries. As a result of the survey, it was recommended that a Pierce County Aquatics Council be established with standing advisory committees in the areas of pool problems, competition, pool management, and aquatics programs.

792. GANSKE, Dwight J. *A survey of the physical education requirements for male students in the four-year colleges and universities of Canada, 1969.* M.S. in Physical Education, 1969. 153 p. (C. L. Peek)

Using a questionnaire to gather data, responses were received from 44 of the 47 independent 4-year institutions of higher learning in Canada. Thirteen stipulated that PE was a requirement for male students. A requirement was found to be most prevalent in Eastern Canada, in institutions of less than 1,000 students, and in institutions operating on

a semester calendar system. Twenty institutions reported never having had a requirement and 21 reported that an elective program was in effect. A requirement was found to be of one year in length in 75% of the institutions and the pass-fail system of grading was the most prevalent system used. Emphasis on dual and individual activities was on the increase while emphasis on team sports was decreased.

793. GREENE, Claude A. *A survey of the physical education administrative provisions, facilities, and curriculums in the Seattle School District, No. 1.* M.S. in Physical Education, 1969. 127 p. (C. L. Peek)

Evaluated were the PE program being conducted in the SHSs of the Seattle School District in order to assess their quality and to make such recommendations as might be deemed desirable. The research chapters of this study divided the PE programs into categories related to administrative provisions, provisions for areas and facilities, and curricular provisions. The La Porte Score Card No. II was used as the primary instrument for collecting data.

794. HARDIN, Jan Christopher. *A study to determine the validity of using self-evaluations to estimate one's level of achievement in physical fitness and recreational sports.* M.S. in Physical Education, 1969. 76 p. (E. L. Hughes)

A sample of students (N=519) enrolled in PE activity classes was asked to fill out a self-evaluation form consisting of a 1-7 rating scale in several items. The physical fitness items included were abdominal strength and endurance, arm and shoulder strength, agility, cardiorespiratory endurance, trunk flexibility, and estimated percent of body fat by weight. The recreational sports were badminton, golf, swimming, and volleyball. Having completed the self-evaluation form, Ss were tested on each of the items. All of the correlations between self-evaluation and physical performance were significant ($P < .01$). However, none were of great enough strength to be of any practicable use. The results implied a low level of self-awareness in the population studied, and recommendations for further study were made.

795. HOFF, Ernest P. *A history of the Washington State championship interscholastic swimming and diving meet from 1934 through 1966.* M.S. in Physical Education, 1969. 489 p. (J. A. Torney)

The historical method involving document research and personal interview was used. It was determined that between 1934 and 1967 the State Meet grew from 7 to 26 teams, and that its growth during this period was affected by national and local economic conditions, population growth, improved transportation facilities, new school and swimming pool construction, and a continuing effort to encourage new schools to participate. It was concluded that: an historian be appointed for the State Meet; during coaches' meetings each year, the secretary use a tape recorder for recording minutes and place team lists and complete names in the Meet archives; the Meet referee complete his duties by checking and certifying Meet results; the Swimming League constitution and bylaws be restored; outgoing League officers transfer all records to successors; officials who have given years of loyal service be recognized;

swimming coaches join their professional organizations; a records' repository and State Swimming Hall of Fame be established.

796. HORN, Lois Blanche. *Factors in voluntary physical activity participation of university women students.* M.S. in Physical Education, 1968. 108 p. (B. J. Purdy)

A questionnaire was used to collect data from 280 college women. Data indicated that: the popular activities were individual and dual and predominantly outdoors in nature; initial learning was reported between ages 7–11 and 12–14 by most participants; average numbers of years (3–6) and high (7–10) years participation was reported by the largest numbers for most activities; skill was rated as average, although half the participants in most activities rated skills above average; below-average ratings were infrequent; learning opportunities such as family and friends were rated as highly influential by large numbers in most activities; school, private or commercial, and community organizations were reported as least influential; activity participation was continued for a variety of reasons; influence of initial learning opportunities varied with age; there is no consistent relationship between source of initial learning opportunity and self-estimated skill level; and there is no consistent relationship between extensiveness of participation and self-estimated skill level.

797. KUKLENSKI, William G. *A comparative study of three exercise programs on the development of bat swinging velocity, throwing distance, and running speed of college freshman baseball players.* M.S. in Physical Education, 1969. 55 p. (E. L. Hughes)

An initial test and a retest measuring running speed, throwing distance, and swinging velocity were administered to 3 experimental groups. Following the initial test, one group received 10 resistive exercises using the Exer-Genie. The weight training group had 10 resistive exercises using the universal gym and barbells. The traditional group used running and throwing as their training program. The test items were readministered to all Ss after 6 weeks (18 sessions). None of the programs was superior in improving running speed, throwing distance, or bat swinging velocity. The Exer-Genie and traditional programs developed throwing distance, running speed, and bat swinging velocity to a statistically significant level. The weight training program, however, only increased throwing distance to a significant level, although in bat swinging velocity there was a definite tendency towards improvement.

798. LAMMERS, Henry G. *A survey of physical education administration facilities, and curriculum in the Mercer Island School District, No. 400.* M.S. in Physical Education, 1969. 140 p. (G. S. Reeves)

Determined was the present status of PE in the Mercer Island School District. The study was divided into the following 3 subproblems: administration, areas and facilities, and curriculum. These subproblems were then evaluated according to La Porte Score Cards Nos. I and II, Revised, in an attempt to determine to what extent the elementary and SHSs' PE programs compared to the standards established in the La Porte Score Cards. The overall rating for the PE program in the 6 elementary schools was fair; the 3 secondary schools rated a poor program on the La Porte scale.

802. RYAN, Michael D. *An evaluation of opinions of selected students, parents, and professional persons concerning curriculum content for instruction in family life and sex education at the junior high school level.* M.S. in Physical Education, 1969. 229 p. (C. A. Mills)

The sources of the data were 73 randomly selected boys and girls enrolled in ninth grade health classes, 80 parents of these students, and 171 professional persons, including 12 medical doctors, 42 school administrators, 26 counselors, 52 teachers, and 39 religious leaders. The data were gathered by means of a questionnaire. There was not close agreement between the students and parents, or between the students and professional persons regarding the importance of family life and sex education general and topical areas. For example, the students selected the general areas of preparation for parenthood and reproduction to be the most important; the parents selected boy and girl relationships, and dating; and the professional persons selected boy and girl relationships, dating, and heredity.

803. SORENSON, Jerome Phillip. *A comparison of physical fitness improvement for students assigned in two classes of varying module time blocks.* M.S. in Physical Education, 1969. 122 p. (N. F. Kunde)

Of the 2 time modules tested, one was of frequent duration in which the students met at least every other day, while the other group alternated every 2 weeks. An analytical statistical method was used to evaluate the AAHPER Youth Fitness Test results of the 3,833 Edmonds JHS students who took part in this study. Combined mean percentile scores for both boys and girls in the seventh and ninth grades were computed as were the standard deviations and *t*. The students were compared on their initial tests, the retest, and the difference between the 2 tests. Frequent PE classes are evidently of more value to the fitness of students than those of more distant time intervals even though yearly time spent in class is the same. The difference in improvement significantly favored the more frequent program.

804. SPRINGER, Darwin P. *A study of the relative effectiveness of two different time schedules for teaching selected volleyball skills in the elementary school.* M.S. in Physical Education, 1969. 79 p. (G. S. Reeves)

Two fourth grade classes from one elementary school were tested initially, retested, and given their final test using the AAHPER Volleyball Skills Test for Boys and Girls. The scores of the 2 groups were matched on the initial test. One fourth grade was arbitrarily selected to receive instruction consecutively, 5 days per week for 3 weeks, and the other group received instruction nonconsecutively, 2 days per week for 7 weeks and one day. Immediately after the last day of volleyball skills instruction each group received their final test. There was no significant difference between the consecutive and nonconsecutive groups relative to their skill retention.

799. MILLER, Lorin Joseph. *A history of the men's intercollegiate athletic program at Seattle Pacific College.* M.S. in Physical Education, 1969. 151 p. (N. F. Kunde)

Determined were the many factors involved in the birth, growth, and maturity of men's intercollegiate athletics in a conservative church college from its beginning in 1945 through 1968. The forces at work, key people involved, and obstacles overcome in developing and guiding the program from its embryonic state with minimal buildings, equipment, and support to its present place as a respected member of the athletic fraternity were depicted. Valuable statistical data are included in a list of appendixes.

800. NICHOLSON, Martha Kay. *The relative effectiveness of personal and televised instruction in body conditioning.* M.S. in Physical Education, 1969. 69 p. (B. R. Milacek)

Two female college control groups received instruction personally from one of 2 master teachers. Two experimental groups received instruction via a television tape of a master teacher who had personally instructed one of the other groups. An arm and shoulder girdle strength test; an abdominal strength test; a cardiovascular endurance test; and a lower back, hip, and leg flexibility test were administered to Ss before and after the 9-week instructional unit. A knowledge examination was administered following the instructional unit, and Ss were asked to evaluate the course and method of instructional presentation. Although the experimental Ss indicated a preference for personal rather than televised instruction, the results of the physical fitness tests and the knowledge examination indicated that instructional television in a PE body conditioning class can be effective.

801. ROBERTSON, Patricia Ann. *Evaluation of instruments to determine body image.* M.S. in Physical Education, 1969. 77 p. (B. J. Purdy)

Women college volunteers (N=57) enrolled in beginning bowling and beginning archery classes served as Ss. Three measuring instruments were used: the revised body image objective rating scale was a check sheet on which Ss estimated their concepts of the size of their body segments. The figure construction test was composed of frontal and lateral outlines of 4 body segments, with 2 factors varied in size on each segment. Ss traced an outline which they felt resembled their figure. Frontal and lateral view photographs were taken of each S. Comparison of the percentage of identical responses on the rating scale indicated that it was a reliable test. The percentage of identical responses on the 2 construction tests showed that Ss were generally consistent, although not as consistent as on the rating scale. Some relationship existed between the percentage of same-size responses on the rating scale and on the construction test. Comparison of the sizes chosen on the constructed outlines with actual size determined from the photographs showed a wide variation in the accuracy with which college women chose body segments that resembled their body sizes.

805. TRUJILLO, Cecilia M. *Effects of beginning swimming instruction on selected personality traits.* M.S. in Physical Education, 1969. 102 p. (M. R. Broer)

To determine the personality traits and change in traits, the Guilford-Zimmerman Temperament Survey was given to 32 entering freshman women nonswimmers enrolled in beginning swimming. Forty-eight similar Ss enrolled in other activity classes were given the survey to determine if the change which occurred could be associated with learning to swim or was merely a result of the college experience. Broomell's fear questionnaire and fear classification were used to classify Ss into groups expressing fear and no fear of the water so that the possibility of fear being a specific factor involved in personality trait change could be studied. It was concluded that there is a possibility that beginning swimming instruction tends to lead to less friendliness and, for those with fear of water (at the beginning of instruction), better personal relations. Fear may have been a factor in the development of the sociability trait for Ss afraid of water.

806. VANDERMEULEN, Sam. *The qualifications of selected British Columbia high school track and field coaches and their attitudes toward the British Columbia Coaches Award Plan.* M.S. in Physical Education, 1969. 133 p. (J. A. Torney)

The coaches' academic preparation, technical training and professional involvement, and competitive and coaching experience were obtained in order to ascertain the coaches' qualifications. In addition, the attitudes of these selected coaches toward self-improvement and the British Columbia Coaches Award Plan were determined. Nonparticipants of the Coaches Award Plan indicated the interest they had in obtaining information concerning the different functions of the Plan, and the cost they believed was reasonable for each type of service. Participants of the Plan not only evaluated the present operation of the Plan but also evaluated certain recommendations to improve it. The information provided by 105 respondents, or 78% of the total possible number of coaches, was the source of all the data.

807. WHITNEY, Sue Roenigk. *Effectiveness of selected relaxation and exercise techniques in tension reduction.* M.S., 1970. 93 p. (M. R. Broer)

Determined was whether tension was reduced in the trapezius muscle by selected relaxation and exercise techniques: the Jacobson technique, a program of working an Exercycle against resistance, and a program of passively riding an Exercycle. College women students (N=36), enrolled in 2 sections of a relaxation class, participated in a control program in addition to each of the 3 programs involving a relaxation or exercise technique. A neurovoltmeter was used for measurement of low levels of electrical activity in the trapezius muscle before and after various programs. Ss' responses to a questionnaire following each program helped in interpreting results. Comparison was made of tension preceding with that following participation. The Jacobson relaxation technique was an effective means of reducing tension of college women and was more effective than passive riding of the Exercycle. Active exercise on the Exercycle increased muscular tension immediately following

participation, but the increased level of activity was not maintained, and if anything, passive exercise on the Exercycle caused an increase, rather than a decrease, in tension.

808. WILLIAMS, Betty Jo. *Three exercise programs' effectiveness in developing junior high school girls' arm and shoulder strength and ability to perform a pull-up.* M.S. in Physical Education, 1969. 114 p. (M. R. Broer)

Seventh grade girls (N=126) were assigned randomly to a control group or one of 3 exercise programs, each of which practiced one of the 3 exercises 2 min./day, 4 days/week, for 8 weeks. Clarke's cable tension tests were used to measure shoulder and elbow flexion and extension strength immediately before and after the program. A pull-up test was administered in the same manner. It was found that 8 weeks of practice in the bent-arm hang and the rope climb was effective in developing shoulder flexion and extension strength, and that the push-up was effective in developing shoulder flexion strength. None of the exercises was more effective than the others in developing strength, and none was highly effective in developing the ability to lift the body weight against gravity's pull as in the pull-up.

809. WYATT, Virginia Anne. *The effectiveness of visual cues and kinesthetic cues in the teaching of the overhand throw to seventh grade girls.* M.S. in Physical Education, 1969. 63 p. (B. J. Purdy)

Data were obtained from 197 girls enrolled in seventh grade PE classes. The learning period was limited to 14 class periods. The experimental teaching aids involved a visual cue which consisted of viewing a loop film of a woman performing the overhand throw and kinesthetic cues which consisted of the use of a weighted badminton racket in the overhand throwing pattern and the use of a jump rope in the same pattern to achieve a "snapping" action. The control group was taught by the traditional method of explanation, demonstration, and practice. A softball throw for distance test was administered to all Ss before and after a 14-day learning period. Pretest, post-test, and improvement scores of the 3 groups were analyzed, as were the pretest, post-test, and improvement scores of the better and poorer throwers of each of the groups. The visual cue was a more effective learning aid than the kinesthetic cues, particularly for poorer throwers, and ability to throw for distance was improved during 14 class periods.

Washington State University, Pullman, Washington (M. Phillips)

810. ADAMS, Samuel Houston. *An analysis of the structure, organization, and athletic activity schedules of the Oregon School Activities Association.* Ed.D. in Education, 1969. 123 p. (G. B. Brain)

The purposes of this study were to: analyze the present organization of interscholastic athletics in Oregon; develop guide lines for determining classifications of SHSs for interscholastic athletic competition; and establish criteria for determining Oregon athletic districts. It was

revealed that more than 50% of all superintendents in Oregon supported state championship play-offs in all sports. Scheduling athletic contests was a major cause of complications in the operation of athletic programs. Football was the most difficult sport to schedule because of travel distance between schools. Unequal size of schools was a major cause of concern in equality of competition. The national trend of state associations is toward more classifications of SHS for athletic competition. Smaller schools had less game and practice facilities, a smaller range of sports offered in the program, fewer levels of competition in the various sports, more travel problems, and favored state championship play more than large schools.

811. BERNASCONI, Charles Edward. *The relative effectiveness of varying information feedback in the learning of a discrete sports skill.* M.S. in Physical Education, 1969. 50 p. (M. L. Enberg)

Determined was the effect of varying information feedback in the learning of the badminton short serve for accuracy. The French short serve test, with visual input of results eliminated, was used as the test instrument. The initial and final test scores were gathered from 87 male college students. Ss were randomly assigned to groups of no information feedback, immediate feedback, 7-sec. delay, and a one-trial delay of information feedback. The intertrial interval was held constant for all groups. Analysis revealed a significant difference between the control and the immediate information feedback groups. The efficacy of delay was not supported as the immediate group was not found to be statistically superior to either of the delay groups.

812. BROWN, Gary Grant. *Randomization of assignments for freshman physical education classes at Washington State University.* M.S. in Physical Education, 1969. 28 p. (R. Doornink)

This study attempted to determine whether each of the freshman activity classes at Washington State University was random in character and if differences existed among classes. An attempt was made to discover if differences in physical ability existed among 24 randomly selected subgroups. Data were gathered by use of 3 tests of physical ability: the 2-min. sit-up which was a highly reliable test of strength, the standing broad jump which was a reliable measure of power, and a speed test which was a reliable test of speed and used the Dekan Timer. Results indicated that no differences existed between the 6 freshman activity classes, and randomization had occurred during the computerized process of placing the students into their respective sections. No significant differences occurred between subgroups.

813. BUCKLIN, Edith Pierson. *Skills tests and pressure perception related to social dance.* M.S. in Physical Education, 1969. 89 p. (M. L. Enberg)

Five skills tests were established, utilizing judges' ratings. Reliability coefficients ranged from .00 to 1.00. The judges later rated 20 beginning social dance students while 2 dance partners subjectively ranked the students. Averaged judges' rating and subjective ranking yielded Spearman rank-difference coefficients between .57 and .97. Eliminating the

skills test with the validity coefficient of .57 was felt to provide a valid test battery for evaluating social dance ability in the stated situation. Two pressure-perception tests determined the ability of women to discriminate between varying amounts of pressure on the back and men to discriminate between varying amounts of pressure required to move an object with hand and forearm control. A low, positive relationship between pressure perception and social dance ability in men and a low, negative relationship for those women whose dance performance placed them at either the high or the low end of the skill curve appeared on the scattergrams.

814. CARMICHAEL, George Allen. *Videotape instant replay as a teaching technique in beginning bowling classes.* M.S. in Physical Education, 1969. 34 p. (R. Doornink)

Ss were 60 male students enrolled in 2 college beginning bowling classes. One class was the control group, while the second class used the videotape recorder. The pre- and post-test design was used. The tests were conducted in the initial and final 3 weeks of the 16-week experimental period. The experimental group had the advantage of self-analysis using the videotape recorder during the 10-week period between tests. Analysis indicated no significant difference between the 2 classes.

815. CHUN, Donna May. *Construction of an overhead volley-pass test for college women.* M.S. in Physical Education, 1969. 66 p. (M. Adrian)

The purpose of this study was to construct a reliable and valid skill test for the overhead volley-pass for college women. A secondary problem was to compare this test with the Clifton Test, a typical wall volley test. Both the newly constructed test, termed the Chun Test, and the Clifton Test were administered to 141 university women students. Subsequent to the skill testing, 36 students were randomly selected and rated subjectively in game play by 3 judges. Reliability and validity coefficients for the test were computed. A chi-square test was used to determine the distribution of the scores as related to the normal curve. Analysis led to the conclusion that both the Chun and the Clifton Tests were valid and reliable, and that neither test was more valid and/or reliable than the other.

816. GARVIN, Grover Robert. *The opinions of undergraduate students relative to the physical education program at Washington State University.* M.S. in Physical Education, 1969. 170 p. (R. Doornink)

Determined were the degree to which each PE course at Washington State University contributed to the stated objectives of PE, and student opinion regarding the PE requirement at that institution. All undergraduate students enrolled in service PE courses were surveyed with questionnaires. The number who responded was 3,428 students. The university PE program is well accepted by participating students; the degree of fulfillment of the stated objectives differs according to the objective, with knowledge and skill achievement rated highly, while the development of physical fitness is rated at a lower level of attainment; and the PE requirement of 4 semesters seems to be accepted by the students.

817. INGHAM, Alan Geoffrey. *The effects of two levels of competition and attraction on social reinforcement.* M.S. in Physical Education, 1969. 71 p. (M. Phillips)

The purpose of this study was to determine the effects of competition and attraction upon facilitation, interference, productivity, and satisfaction. Competition consisted of intergroup and intragroup, and attraction consisted of high and low. Sixty-four male, eighth grade students were selected from the total population on the basis of a partial-rank-order sociometric test. From data provided by a sociometric test, dyads consisting of high mutually attracted individuals and dyads consisting of low mutually attracted individuals were identified. The 16 high attraction dyads were randomly assigned to 2 equal groups. One group was subjected to the intergroup treatment and the other to the intragroup treatment. The same procedure was employed for the 16 low attraction dyads. The experimental game was an adaptation of shuffleboard, during which Ss' behaviors were recorded using Borgatta's Interpersonal Process Scores. Productivity was measured by game scores. There was significantly more ($P < .01$) facilitation behavior and satisfaction and significantly less ($P < .01$) interference behavior in the intergroup treatment when compared with the intragroup treatment. This was also true for high attraction dyads when compared with low attraction dyads ($P < .01$). No differences were obtained for the productivity data.

818. JOHNSON, William Dennis. *Effect of arm training on maximal arm work.* M.S. in Physical Education, 1969. 34 p. (P.D. Gollnick)

Nine competitive college swimmers and 8 college freshmen were tested to determine if maximal arm work is affected by arm training. The untrained group had not engaged in systematic training for at least one year prior to testing. Results showed that the maximal oxygen uptake during arm work for the combined groups was 67% of the maximal oxygen uptake attained during treadmill running. Each group attained approximately the same percent of their total maximal oxygen uptake during the arm work as there was no significant difference between the groups. However, the swimmers attained a maximal oxygen uptake of 4.71 ± 0.43 L/min. during treadmill running, which was 18% more than the 3.98 ± 0.43 L/min. of the control group. The maximal oxygen uptake of the swimmers during arm work was 3.19 ± 0.32 L/min. as compared with 2.64 ± 0.43 L/min. of the control group, or 21% more than the control group. The maximum work load accomplished by the swimmers on the arm work was 28% higher than that of the control group. The total work load attained for the entire test was 60% more for the swimmers as compared with the control group. A plateau in oxygen uptake was observed during the last 2 min. of the arm exercise for the swimmers. An increase in work output without additional increase in oxygen uptake showed that the swimmers apparently had a greater anaerobic capacity than the control group which did not demonstrate the plateau. Blood lactate levels following arm work were also significantly greater for the swimmers as compared to the control group.

819. LANGSDORF, Edward Vernon. *Effectiveness of a programed learning text on attitudes.* M.S. in Physical Education, 1969. 60 p. (R. Doornink)

Two college freshman activity classes composed of men with low attitudes toward PE, low attitudes toward regular exercise, or low attitudes in both areas as determined by the Wear Physical Education Attitude Inventory and the Bassett Regular Exercise Attitude Inventory were given instruction in beginning wrestling. One class was required to read a textbook on the values of PE as well as take part in the regular class activity in which the control class took part. At the end of the semester course the groups with low attitudes toward PE or low attitudes toward regular exercise in each class were given a second attitude questionnaire for their respective low attitude area. There was attitude improvement within each group; all but the experimental group with low attitude toward PE improved significantly within these groups; and there was no statistically significant difference between the experimental and control groups tested on attitude toward PE, or between the experimental and control groups tested on attitude toward regular exercise.

820. LUCE, Linda Kay. *The effect of physical education activity classes stressing musical rhythm on the ability to keep rhythm.* M.S. in Physical Education, 1969. 37 p. (M. Phillips)

College freshman women (N=337) who were enrolled in either rhythmic or nonrhythmic classes were given the Drake Rhythm Test at the beginning and end of the semester. During the intermediate period the rhythm classes were taught rhythm through the physical experience of dance and rhythmic gymnastics. The nonrhythmic classes, which were the team sports classes, received little rhythm training. ANOVA treatment of the data showed that the performance on the Drake Rhythm Test was not statistically different between the rhythmic and nonrhythmic groups. Both the rhythmic and nonrhythmic groups scored significantly higher on Test B than Test A. The *t* test for analyzing pretest and post-test mean scores within groups indicated that the sports group improved significantly on Test A and on Test B the dance group improved significantly.

821. MELLO, Michael Wayne. *Blood response of normal and splenectomized rats after exercise.* M.S. in Physical Education, 1969. 40 p. (P. D. Gollnick)

Investigated were the effects of various intensities of exercise on the erythrocyte and leucocyte counts and hematocrits of normal and splenectomized rats. Male Sprague-Dawley albino rats (N=38) were assigned into sedentary and active groups. Active animals were trained to run in motor-driven wheels for a 6-week period until each animal could run 1 mph or faster for 60 min. The rats were subjected to a 3-week indoctrination period in which their tails were heated in warm water (44-46 C). Blood samples were taken for erythrocyte and leucocyte counts and hematocrits before and after each of the 6 exercise periods. The rats ran for 30 min. at 3 speeds, 0.5, 1.0, and 1.4 mph, to determine the effects of severity of activity. They were then splenectomized and given a short recovery-retraining period before being retested at the previously designated work levels. Exercise significantly decreased the number of leucocytes and

increased the number of erythrocytes and hematocrits in both groups of animals. Splenectomy did not significantly alter the response of the cellular components of blood. Increasing the severity of the work load produced significant differences in cell counts and hematocrits.

822. MOODY, Peter Richard. *The effect of a structured perceptual-motor activity program on reading ability and visual perception at the grade one level.* M.S. in Physical Education, 1969. 79 p. (V. P. Dauer)

Ss were 48 boys and girls enrolled in 2 grade I classes. Of the 2 classes, one was randomly selected to take part in the experimental program and one was designated as the control group. Ss were tested (pretests) utilizing the Gates Primary Sentence Reading Test and the Frostig Developmental Test of Visual Perception. The experimental class then participated in 29 half-hour perceptual-motor activity lessons for a 10-week period. The control class received no special training. All Ss were retested at the conclusion of the program. The expectation that the implementation of a perceptual-motor activity program would result in significant improvements in reading and visual perception was not generally supported. The perceptual-motor activity program was related to a significant improvement in the ability of grade I boys to perceive constancy of shape. Girls were better able to benefit from reading instruction than boys.

823. OGLESBY, Billie Fran. *An electromyographic study of the rectus abdominis muscle during selected gymnastics stunts.* M.S. in Physical Education, 1969. 46 p. (M. Adrian)

The upper, middle, and lower portions of the rectus abdominis were tested using bipolar electromyography in order to determine the function of this muscle in the execution of 7 gymnastics stunts. Performances of 6 women gymnasts and the corresponding electromyograms were video-taped. The electromyograms were analyzed as a percentage of a maximum trunk flexion test administered prior to performance. Two gymnastics coaches rated the performances of the stunts using the video tape. Data were analyzed using a visual descriptive method and ANOVA. The rectus abdominis muscle functioned significantly in the front limber, the back bend, the forward roll on the balance beam, and the kip and single-leg shoot-through on the uneven parallel bars. The lower portion of the rectus abdominis was significantly more active than either of the other 2 muscle portions. There existed among Ss a definite pattern of electrical activity unique to each stunt.

824. OLSON, Edward Franklin. *The effectiveness of rope skipping as a substitute for running to improve the physical fitness of junior high school boys.* M.S. in Physical Education, 1969. 54 p. (V. P. Dauer)

On successive Saturdays, 24 JHS boys took 2 pretests of exhaustion on a bicycle ergometer. They were then randomly assigned to one of 3 groups for 6 weeks. The running treatment was given to one group and the rope skipping treatment to another group. The third group, controls, collected the data of the treatments. Analysis of covariance showed

significant differences ($P < .01$) between the running and control groups. No significant differences were found between the rope skipping and running groups, and it was concluded that rope skipping is a good substitute for running in improving the physical fitness of JHS boys.

825. PANGRAZI, Robert Paul. *The effect of a supplementary training period on shoulder-girdle strength in fourth and fifth grade children.* M.S. in Physical Education, 1969. 36 p. (V. P. Dauer)

Two groups of children participated in a regular PE program plus a supplementary training period for 15 weeks. The experimental group's training period consisted of activities on wall-attached climbing frames and climbing ropes. The control group received a period consisting of circuit training. Data were obtained from the administration of a pretest at the outset of the study and a post-test at the termination. Test items used to measure shoulder-girdle strength were bench push-ups, pull-ups, and flexed-arm hang. Differences within both the control and experimental groups between the pretest and post-test means for the bench push-ups when analyzed by sex only were significant ($P < .01$). Comparison of the pretest and post-test mean differences between the control and experimental groups revealed no significant differences for any test item.

826. SAUBERT, Carl William. *Plasma lactic dehydrogenase responses to exercise in rats.* M.S. in Physical Education, 1970. 61 p. (P. D. Gollnick)

The effect of various forms and intensities of exercise on the presence of lactic dehydrogenase (LDH) and its isoenzymes in the blood of trained and untrained male Sprague-Dawley rats was investigated. Two control groups and 3 trained groups, 5 rats per group, were trained by running in motor-driven wheels for 1 hr./day (5 days/week) at 26.8 m/min. Five controls were sacrificed at rest. All other animals were exercised prior to sacrifice. Five controls and 5 trained animals swam 4 hr., 5 trained animals ran at 26.8 m/min. for 1 hr., and 5 trained animals ran at 26.8 m/min. until exhausted. Each day one animal from each group was sacrificed. Plasma LDH activity was determined by the spectrophotometric method using a Beckman DU Spectrophotometer. Electrophoresis was used to detect the LDH isoenzymes present in the plasma. All forms and intensities of exercise produced significant ($P < .05$) increases in plasma LDH activity and isoenzyme concentration. Plasma LDH-plasma hemoglobin correlations were highly significant in all groups except control swimmers. Training helped prevent the escape of LDH from tissues in trained animals following all experimental exercise loads. Increases in plasma LDH activity in trained animals following exercise were probably due almost entirely to exercise-induced disruption of platelets and erythrocytes.

827. SCOTT, Susan. *Factors influencing whip kick performance.* M.S. in Physical Education, 1969. 38 p. (M. Adrian)

Determined was the influence of the following factors upon performance of the whip kick in the breaststroke: lower leg length, foot length, hip breadth, thigh girth, inward rotation at the hip joint, and knee extension strength while the femur was inwardly rotated. Undergraduate women

(N=84) who were able to execute the whip kick correctly were given a whip kick proficiency test and measurements were taken of the 6 physical factors. The Pearson product-moment method was used to determine the intercorrelations of the 7 test items, but the relationships between whip kick performance and the other 6 factors were nonsignificant. A comparison of the tails of the distribution based on whip kick proficiency yielded further support of the conclusion that the physical characteristics under investigation cannot be used as successful predictors of whip kick performance.

828. VAUGHN, Ross Edward. *The relationship of certain variables to success in batting.* M.S. in Physical Education, 1969. 25 p. (R.H. Doornink)

Ss were 13 males who were members of the varsity and junior varsity baseball teams at Washington State University in the spring of 1969. Photographic techniques were used to quantify bat velocity, length of the lever arm, number of degrees the bat travelled the last .01 sec. before contact with the ball, and number of degrees the bat travelled the last .03 sec. before contact. Success in batting was quantified by batting average, slugging percentage, and percentage of extra base hits. The correlation between each pair of variables and criteria under consideration was computed and analyzed. Bat velocity is one important aspect of batting; a short swing with good wrist action is most conducive to hitting for a high batting average; and a long swing with the arms straightened and good rotation of the arms and hips is most conducive to power hitting.

829. WILLIAMS, Clyde. *Regulation of norepinephrine-induced lipolysis in fat cells from trained rats.* M.S. in Physical Education, 1969. 40 p. (P.D. Gollnick)

The lipolytic response of isolated fat cells from trained and untrained rats to various concentrations of norepinephrine (NE) was investigated. Rats were trained by running in motor-driven wheels for 1 hour daily (5 days/week) at 26.8 m/min. The animals were killed by decapitation and fat cells were isolated. Lipolysis was determined from the production of free fatty acids (FFA) by the fat cells following 1 hour incubation in 4% albumin buffer containing .02, .1, 1.0, and 10.0 μg of NE/ml. The effects of beta adrenergic blockade (1 μg propranolol/ml) and phosphodiesterase inhibition (10^{-4}M theophylline) were also studied in the 2 groups. The release of FFA was significantly ($P < .01$) greater from the fat cells of the trained animals at all concentrations of NE tested. Theophylline potentiated the lipolytic response of NE in both groups, but the responsiveness of the cells from the trained rats was significantly ($P < .01$) greater than that of the controls. Propranolol was less effective in blocking FFA production in response to NE in fat cells from trained rats than in the untrained controls.

Wayne State College, Wayne, Nebraska (R. Barclay)

830. EWALT, Merritt A. *A guide for analyzing selected field events in track and field athletics.* M.S.E. in Physical Education, 1968. 62 p. (D. A. Pennybaker)

Film was obtained on which were recorded the performances of excellent competitors and the performances of average competitors for selected field events. Similarities and differences in the mechanics of the 2 performances were analyzed. Slow motion pictures were obtained which depicted an excellent performer's execution of the same field event. Field events for which performers were photographed were the pole vault, the high jump, the long jump, the discus throw, and the shot put. The sideview of each event that was executed by an excellent performer was compared with the sideview of the same event that was executed by an average performer.

831. OFFENBURGER, Daniel J. *A physical education program for small liberal arts colleges or universities, with special emphasis for Creighton University.* M.S.E. in Physical Education, 1969. 108 p. (D. A. Pennybaker)

Administrators, athletic coaches, and PE teachers in 200 Nebraska and Iowa schools were asked to evaluate customary components of the curriculum for preparing PE teachers and coaches. The evaluation was according to a numerical scale. General conclusions for the curriculum were that practical experience for coaches and PE teachers should be more extensive than practice teaching. The professional preparation program should be reviewed to determine which courses should be combined and what topics should be stressed in each course. These, and conclusions about specific courses or units of study, were utilized in designing a curriculum for the Department of Physical Education at Creighton University.

Western Illinois University, Macomb, Illinois (G. W. Hermann)

832. ACKERSON, Gary L. *An analysis of swimming curriculums in schools offering swimming in grades nine through twelve.* M.S. in Education, 1969. 75 p. (M. H. McIntyre)

Questionnaire returns from 104 randomly selected SHSs throughout the U.S. with aquatic programs provided data. Findings indicated that the curriculum should be organized into aquatic learning experience units utilizing auxiliary aids in the presentation of the program; that swimming should be required for 3 or 4 years in 6-week units; that stroke technique, lifesaving, water games, survival swimming, elementary diving, and competitive swimming were the most advocated elements in the aquatic curriculum; and that the American Red Cross Water Safety Instructor Certification was the most desired qualification for the person directing the aquatic program.

833. CRAMER, Ronald L. *Parental opinion of physical education.* M.S. in Education, 1969. (C. H. Strong)

Opinion was solicited from 90 parents by means of a questionnaire to determine how the parents of pupils conceived the place of PE in the school curriculum. PE was considered to be an important subject. The majority of respondents believed that effort was the criterion most often used by instructors when grading pupils in PE. Ninety % of the parents felt calisthenics was the most important activity in the PE program, while 78% indicated that they knew the difference between PE and interscholastic athletics. Parents generally were not satisfied with youth fitness and assigned the basic responsibility for this to the PE teacher.

834. FERRY, Bernard L. *A study of the effect of a study hall and tutorial program upon the grade-point average of freshman football players.* M.S. in Education, 1969. 32 p. (G. M. Brady)

Ss consisted of 105 freshman male students at Western Illinois University. Freshman football players attending the mandatory study hall and tutorial program achieved a statistically significant gain ($P < .05$) in the difference between their predicted grade-point average and achieved grade-point average as compared to freshman football players who did not attend a mandatory study hall and tutorial program. Freshman football players not participating in a required study hall program achieved a statistically significant gain in the difference between the predicted and achieved grade-point average as compared to a nonathlete group not participating in a mandatory study hall and tutorial program.

835. FITZPATRICK, June A. *The effects of specific instruction on throwing and catching movement patterns of junior high school girls.* M.S. in Education, 1969. 36 p. (B. E. Jensen)

Girls in the seventh and eighth grades were pretested as possible Ss. The Movement Pattern Checklists by Godfrey and Thompson were used to evaluate throwing and catching patterns. A composite score was obtained for each girl by adding throwing and catching scores. All girls with a composite score of 13 or less were placed in one of 2 groups. The experimental group participated in instruction of throwing and catching for 7 min. a day during 14 days of the 5-week training program. A control group continued participation in normal class activity. A final test indicated no significant gains between the 2 groups.

836. HICKENBOTTOM, Carroll D. *A comparative study of isotonic and isometric exercises to determine arm strength development.* M.S. in Education, 1969. 54 p. (V. F. Lowell)

Boys (N=45) in grades 6–8 were divided into 3 groups to determine which method of exercise, isometric or isotonic, would develop arm strength more quickly. The groups exercised 3 days/week for a 9-week period and were tested before exercising each day by a cable tensiometer. Both isotonic and isometric flexion and extension exercises increased strength of the elbow; isotonic and isometric flexion exercise produced significant gains in strength within the first 3-week period, and isometric exercises tended to produce strength faster, although not significantly; and no significant difference existed between the rate of strength gains for isotonic

and isometric exercises involving flexion and extension at the elbow for a 9-week period.

837. JEZEK, Vera. *A study of student suicides with emphasis placed on case histories occurring in Peoria County, Illinois.* M.S. in Education, 1969. 64 p. (B.E. Jensen)

Questioned was the relationship of stress factors to suicidal action, using males and females aged 5 to 25 as Ss. Data were collected from 3 sources: the Peoria County School Systems for the 1968-69 school year; the Peoria Suicide Prevention Service for the period from January, 1968, to June, 1969; and the Peoria County Coroner's Office files for 1965 to 1968. The study verified predictions made by authorities in mental health who had previously researched suicidal behavior. A lack of cooperation in the reporting through the school systems indicated that the social stigma against the phenomenon of suicide still prevails. Stress factors were found to have a definite impact on suicidal action, being responsible for almost 98% of all cases studied.

838. MARTIN, James L. *A study to determine the frequency and effectiveness of field goal and free throw shooting in relation to portion of game, area of court, and varying defenses.* M.S. in Education, 1969. 77 p. (H.S. Greer)

Twenty-nine Illinois SHS basketball games were charted involving 6 different schools. The schools were divided into 3 sizes — large, medium, and small. The basketball court was divided into 3 zones: Zone I was an area within a 15-ft. radius from the basket; Zone II was between a 15- and 25-ft. radius; and Zone III was beyond 25 ft. Shots were charted according to the min. of the quarter in which taken while noting the defense employed by the opposition. The large basketball teams attained higher field goal and free throw shooting percentages than other schools. The large and small schools achieved higher percentages against a man-to-man defense, while the field goal shooting of the medium size high schools was more effective against a zone defense. There was no apparent difference in the number of field goals attempted or made per each 1-min. interval of the game.

839. SCHMALZ, Frederick B. *An analysis of selected factors affecting the growth of intercollegiate soccer in the colleges and universities of the United States.* M.S. in Education, 1969. 62 p. (G.W. Hermann)

Data relative to the overall soccer program and background of players at 141 American colleges and universities were collected by means of a questionnaire. The majority of the players on college soccer teams in the U.S. were American-trained. The means for teams studied were 12.0 American-trained players (80%) and 3.1 foreign-trained players (20%). The American-trained player, on the average, was not taught the basic skills of soccer until SHS, while the average foreign-trained player was exposed to soccer fundamentals at an earlier age. Coaches felt that the foreign-trained player was generally more skillful but that the American-trained player exhibited a greater desire considered necessary for successful intercollegiate soccer competition.

Western Ontario University, London, Ontario, Canada (G. A. Paton)

840. BUCKOLZ, Eric E. *Organizational processes for gross motor performance.* M.A. in Physical Education, 1969. 105 p. (J. R. Richardson)

Gross motor patterns obtained from stabilometer performances were studied. Changes in the amplitude, rate, and frequency of responses were measured as practice continued. Strategy employment was a subsidiary concern. Six Ss received 15 1-min. trials with 30 sec. rest between each trial for 10 consecutive days. The error output from the stabilometer provided the input to the analog computer which was patched to provide the following 3 signals: performance error, absolute error, and error velocity. In addition, the error velocity signal was stored on magnetic tape and the power spectral densities obtained by performing autocorrelations and applying its Fourier transform. A significant F ratio ($P < .01$) was yielded and subsequent analysis employing Duncan's New Multiple Range Test demonstrated significant amplitude changes occurred on days 2 and 7. The only significant difference in the rate of movement occurred between days 1 and 2. The results produced lend tentative support to the conclusion that the operator adjusts for the dynamic component (error velocity) of the response pattern more quickly than he does for the static component (average absolute amplitude).

841. CORBETT, John J. *The effect of different frequencies of weight training on muscular strength.* M.A. in Physical Education, 1969. 93 p. (M. S. Yuhasz)

Exercise frequency was compared after an equal length of time and after an equal number of training sessions. SHS boys ($N = 28$) were assigned to one of 4 groups, 3 of which were experimental and one a control. One of the experimental groups trained twice a day 5 days a week; a second, once a day 5 days a week; and the third, 3 times a week. All 3 groups used the same basic isotonic program to exercise the upper arm muscles. After 6 weeks of training the experimental groups all experienced significant increases in isotonic strength. However, no significant difference between any of the experimental groups emerged when compared after an equal length of training time, nor when the experimental groups were compared after an equal number of training periods.

842. HILL, J. Stanley. *The effect of frequency of exercise on the cardiorespiratory fitness of adult men.* M.A. in Physical Education, 1969. 89 p. (G. A. Wearring)

Three groups (control, 3 times per week, and 5 times per week) were tested initially, after an equal length of time (8 weeks), and after an equal number of exercise sessions (40). Ss trained on a bicycle ergometer at a work load computed as 65% of maximum work load obtained from the allout Balke bicycle ergometer test. At the end of an equal length of time, the 5-times-per-week group was more effective in improving cardiorespiratory fitness as measured by maximum oxygen intake in both liters/min. and ml./kg./min. Both groups were equally effective in

improving the length of the bicycle ride and reducing resting heart rate, with the 3-times-per-week group being more effective in reducing heart rate at a submaximal work load. After an equal number of exercise sessions, the 3-times-per-week group was more effective in improving the length of the bicycle ride and in reducing the heart rate at a submaximal work load.

843. MUTIMER, Brian T. P. *Attitudes towards physical activity of grade twelve boys in two London high schools.* M.A. in Physical Education, 1969. 105 p. (W. J. L'Heureux)

Grade twelve boys (N=190) from 2 London, Ontario, SHSs responded to the Kenyon B.A.T. semantic differential scale and general information inventory. The purpose was to examine the relationship between attitude toward physical activity as measured by the instrument, and a number of variables taken from the information obtained through the general information inventory. Of the variables that were examined only 3, primary involvement, frequency of reading about sport in books and magazines, and membership in sports-sponsoring clubs, showed a significant relationship with attitude towards physical activity.

844. PRINCE, John Stevens. *Attitude toward physical education: A comparative study of first and fourth year secondary school boys and girls.* M.A. in Physical Education, 1969. 114 p. (G. A. Wearring)

Grades 9 and 12 SHS boys and girls were Ss whose attitude toward PE and activity patterns and interests were surveyed. Instruments used were the Wear Physical Education Attitude Inventory, Equivalent Form A, and the Individual Inventory. Nine variables were selected from the information provided by the Individual Inventory. Using Ss' Attitude Inventory scores, the Brigham Young University Generalized Analysis of Variance/Covariance Program was conducted on each of the variables. ANOVA indicated that the grade 12 boys had lower attitude scores than the grade 9 boys ($P < .05$). Girls indicated a slightly more favorable attitude toward PE than boys, and grade 12 girls slightly higher than grade 9 girls. Ss active in organized athletic activities showed a more favorable attitude toward PE than did inactive Ss. More favorable attitudes toward PE were also shown by Ss with higher IQ's, those with above-average academic achievement, and those who received encouragement from their parents toward participation in an athletic program.

University of Wisconsin, Madison, Wisconsin (J. G. Wolf)

845. BARRETT, Kate Ross. *A procedure for systematically describing teacher-student behavior in primary physical education lessons implementing the concept of movement education.* Ph.D. in Physical Education, 1969. 225 p. (L. E. Halverson)

The purpose of this study was to develop and test a procedure for systematically describing teacher-student behavior in primary PE lessons, implementing the concept of movement education. Supported by curriculum theory and current perspectives relevant to the concept of movement

education, a model of 6 components for identifying and describing basic components of this specialized context was developed. The category system consisted of 4 major dimensions: Movement tasks, Content, Guidance, and Student Response. Each dimension was subdivided into individual categories with 32 categories comprising the final system. Data used to determine the interjudge agreement, intrajudge agreement, and validity were the recorded observations of 12 videotaped primary PE lessons by 5 trained observers, and responses from selected experts in elementary school PE. Percentages of agreement were calculated to indicate interjudge and intrajudge agreement. Construct and content validity were examined. The category system as constructed showed promise for systematically describing teacher-student behavior in primary PE lessons implementing the concept of movement education.

846. BOLITHO, Norman Howard. *An investigation of the incidence and nature of head injuries in ice hockey at the amateur level.* M.S. in Physical Education, 1969. 89 p. (A. J. Ryan)

Two questionnaires were sent to college, university, and junior hockey teams in the U.S. and Canada. Teams (N=28) cooperated by completing at least one of the forms. The Injury Report Form was concerned with type of head injury, cause, length of disability, and number of players wearing headgear when injured. The Opinion Form pertained to attitudes toward and usage of protective headgear. Results indicated a high frequency of head injuries, especially facial, with a direct blow from a hockey stick as the cause in at least 52% of the cases. Although the majority of amateur players used headgears, they displayed mainly negative attitudes toward them. The players associated lack of comfort, excessive heat, interference with performance, retaliation from opponents, and loss of individuality with the wearing of a protective headgear. The results indicated a need for development of a headgear which can provide more adequate protection, and the basic need for education of the ice hockey world as to the risk of head injuries with the possibility of serious or fatal consequences.

847. BROOKINS, James V. *An investigation of the effect of running as a part of a high school wrestling training program to "fitness" and success in competitive wrestling.* M.S. in Physical Education, 1969. 85 p. (K. G. Stoedefalke)

Ss (N=24) were randomly assigned to 2 groups and matched in weight and wrestling skills. The running group participated in daily activities including jogging 1 or 2 miles, rope skipping, running steps, wind sprints, and running relays as well as the regular wrestling work-outs. The control group work-out consisted of activities involved in developing wrestling skills. The groups were tested at 6 time intervals during the 4-month experiment. Tests consisted of 15-min. runs and competitive wrestling matches. $\dot{V}O_2$ intake was estimated for each run. Data were analyzed by the use of descriptive and inferential statistics. The running group was able to maintain a higher fitness level throughout the season and was more successful in competitive wrestling matches. Weight reduction had no deleterious effect upon cardiovascular performance.

848. CLAREMONT, Alan D. *The effects of changes of body temperature on the oxygen deficit incurred in exercise.* M.S. in Physical Education, 1969. 45 p. (F. J. Nagle)
This study was designed to determine if changes in body temperature affected the magnitude of oxygen deficit during transition from a resting metabolic state to a condition of maximal aerobic capacity. Maximum $\dot{V}O_2$ and resting metabolic determinations were made prior to either a cold bath, warm bath, normal warm-up run, or no warm-up treatment. Measurements of pulmonary ventilation and expired CO_2 and O_2 were obtained for the final min. before running, and during the test run and recovery period. Heart rate and body temperatures were also monitored. ANOVA revealed no significant difference among oxygen deficits during runs following the 5 treatments. Data also revealed no significant variation in oxygen uptake during the recovery period. Psychological and physiological effects of the treatments were discussed.

849. COHEN, Judith. *The field hockey pass: A cinematographic analysis.* M.S. in Physical Education, 1969. 104 p. (E. M. Roberts)
It was the purpose of this study to analyze field hockey passes of 2 skilled performers (members of the 1968 Netherlands Touring Team), to determine the techniques and mechanics used to pass the ball in 5 different directions. Three 16 mm. Kodak Cine-Special cameras, at 65 frames/sec. and 1/1400 shutter speed, were used to obtain side, rear, and overhead views of the Ss performing straight ahead passes of a stationary ball, and straight ahead passes, diagonal passes to the right and left, and square passes to the right and left from a dribble. Measurements analyzed were angular change of wrist and elbow; segmental inclination of upper arm, lower arm, and stick; pelvic and upper trunk motion; stick and ball velocities; foot position; and shoulder facing. Ss, with slight variations, turned into similar body positions for all the passes. As a result of these positions, a similar pattern of joint actions could, and did, occur over all the passes. Variability in amount of joint actions was present, but was not directly associated with any one pass.

850. DANIELS, Jack T. *Aerobic and anaerobic performance characteristics of champion runners at sea level and moderate altitude.* Ph.D. in Physical Education, 1969. 62 p. (F. J. Nagle)
The effects of various first-lap running speeds on aerobic and anaerobic components in middle-distance runs were studied under sea level and moderate altitude conditions. The experimental group consisted of 24 athletes in training for middle-distance competitions at the 1968 Olympic Games in Mexico City. Tests were performed on 400 m. tracks. Five-lap runs were used to determine aerobic power, and 2-lap tests for measuring the initial 2-min. oxygen consumption and O_2-deficit when starting: at average race pace, at slower than, and at faster than average race pace. Measurements of respiratory gas exchange were made before and during the tests, and of heart rates immediately after each test run. Faster running speed during the first min. of a middle-distance race was accompanied by a sharper rise in oxygen consumption during the first 2 min. of the run. Running the first lap of a 3-mile race 5 sec. faster or slower than average race pace did not elicit a substantial change in the O_2

deficit accumulating during the first 2 min. In a 1,500 m. race, however, an initial speed of 5 sec. faster than average race pace resulted in a considerably higher O_2 deficit. At the altitude of 2300 m. the oxygen deficit during the first 2 min. of a race was greater than at sea level. Training at altitude did not affect aerobic and anaerobic components of runs at sea level. Successful runners attained maximum oxygen intakes quicker than unsuccessful runners and showed less initial involvement of anaerobic mechanisms. Heart rates counted immediately after test runs or races were slower at altitudes than at sea level.

851. EKERN, Sallie Ruth. *An analysis of selected measures of the overarm throwing patterns of elementary school boys and girls.* Ph.D. in Physical Education, 1969. 192 p. (L. E. Halverson)

Compared were performances of second, fourth, and sixth grade boys and girls (2 boys and 2 girls at each grade level) on the basis of selected measures taken from film records, with emphasis on the preparatory phase of the throw. This phase was defined as the sequence of movement from the starting position to the beginning of the medial rotation of the humerus of the throwing arm. Selected body levers were studied, noting time of entrance, duration of action, moment arm lengths, and range of movement. Position and direction of movement among selected body parts, path of the ball, center of gravity, changes of the body, and the bases of support were investigated, and comparisons made. Results indicated that boys in the preparatory phase used greater reverse spinal rotation, greater arm abduction, and larger working bases, with more advantageous foot placement, and used pelvic and spinal reverse and forward rotations more effectively. Boys used a smaller amount of time for medial rotation of the humerus, and had greater forward travel of the position of the center of gravity in space, with greater forward trunk inclination, the throwing arm abducted closer to 90°, and greater elbow extension in the throwing arm, at ball release. Age trends were noted in an increase in forward and lateral trunk inclination, a decrease in time used for medial rotation of the humerus, and an increase in the size of the working base of support accompanying an increase in age. The influence of several postural reflexes upon the throwing act was discussed.

852. ENGLISH, Joan. *Dance in seventeenth century Massachusetts with particular reference to Indian, Puritan, and Anglican cultures.* M.S. in Physical Education (Dance), 1969. 64 p. (F. A. McPherson)

An attempt was made to discover if the values of Indian, Puritan, and Anglican cultures in seventeenth century Massachusetts were reflected in their dances. The historical, educational, religious, and social backgrounds were briefly described, and the place of dance within each culture was illustrated. A study was made of reasons for dancing, choice of dances acceptable within each society, and movements, quality, spatial patterns, and interaction between dancers. To the Indians, dance was an essential part, playing a significant role in important occasions including religious ceremonies, curing of sickness, torturing of a prisoner. Strict Puritans tolerated certain forms of dance within their community, while at the same time their leaders attempted to develop within the society a negative attitude toward the activity. The Puritans' preoccupation

with the need for a covenant with God, their sense of extended responsibility, which caused them to interfere with the values of other cultures, and their fear of the devil were reflected in their attitudes toward dance. In the Anglican community, the lower classes used traditional dances from England as a form of recreation, while the upper classes used more stylized dances as a form of social activity and also as an educational medium, through which stylized modes of behavior could be transmitted to the younger generation.

853. EYRAUD, Katherine C. *A quasi-dynamic simulation of parallel ski turn initiation.* M.S. in Physical Education, 1969. 155 p. (A. Seireg and E. M. Roberts)

A force platform capable of monitoring all forces and moments applied by the skier was utilized. Results were used to derive a simplified mathematical model for initiation of the turn. Formulas were obtained for determination of the body inclination necessary for turn stability. Equations for calculation of the limiting coefficients of friction necessary to prevent side slip, a procedure for mathematical evaluation of the ski trances, and quasi-dynamic coefficients of friction between the skis and the slope at different snow conditions were all given. Comparative experimental data were given for 3 other skiers. Results were also obtained for simulated acts of the French style turn with and without poles. The study provided a first step toward basic understanding of the mechanics of turning.

854. FORESTER, Hubert V. *The effects of chronic exposure to hypoxia and physical training on ventilatory response.* Ph.D. in Physical Education, 1969. 173 p. (F. J. Nagle)

Investigated was the effect on resting and exercise ventilation of short- and long-term altitude acclimatization and physical training. Three groups were involved: lowlanders exposed to altitude (N=10) at 3,100 m, lowlanders (N=11) permanently living at altitude, and native altitude residents (N=10). A part of each group participated in a physical training program while at altitudes. Ventilatory responses were obtained with Ss in the following conditions: supine rest, treadmill walking at various speeds, and separate periods of increased CO_2 and hypoxic stimulation. ANOVA and the Scheffé test were used to analyze the data. Short-term acclimatization produced reduced PO_2, PCO_2, HCO_2, base excess and hemoglobin saturation, increased pH and lactate and unchanged hemoglobin and hematocrit in the arterial blood. Responses to increased partial pressure of O_2, CO_2, and hypoxia were all markedly increased, long-term acclimatization produced a markedly lower response to stress at altitudes, but at sea level the highlanders displayed little difference. Finally, training at altitudes resulted in reduced heart rates and lactate levels and increased maximal O_2 consumption.

855. HOWLEY, Edward Thomas. *Intramuscular fatty acid mobilization in isolated,* in situ, *dog skeletal muscle.* Ph.D. in Physical Education, 1969. 62 p. (F. J. Nagle)

Investigated was the mobilization of free fatty acids (FFA) from intramuscular adipose tissue. The gracilis muscle of mongrel dogs (N=9)

was isolated *in situ*, and FFA mobilization was measured during control and simulated exercise. Exercise was induced by a faradic stimulation through the sectioned obturator nerve. The contractions were maximal and the muscle stimulated either .5T/sec. (1 twitch per 2 sec.), 1T/sec., or 2T/sec. Effects of norepinephrine and nicotinic acid were observed. FFA mobilization was calculated by measuring the arterio-venous differences in titratable and labelled FFA, and muscle blood flow. ANOVA demonstrated that FFA are released at a rate equal to uptake in both the control and .5T/sec. groups. Norepinephrine did not increase nor did nicotinic acid decrease FFA mobilization. Glycerol, measured enzymatically, is not released from intramuscular adipose tissue stores in spite of constant FFA mobilization.

856. KAPRELIAN, Mary H. *A comparison of two aesthetic theories as they apply to modern dance.* Ph.D. in Physical Education (Dance), 1969. 155 p. (L. O. Kloepper)

Examined was the art of dance as a medium for expression and communication, in the light of a critical comparison and evaluation of the aesthetic theories of expressionism and formalism. Since one can divide contemporary dance into the 2 broad categories of dances composed for the sake of moving, and dances composed for the purpose of expressing feelings and ideas, and there are 2 popular aesthetic theories, namely formalism and expressionism, it was decided to apply the 2 theories to the 2 ways of choreographing. The aesthetic theories of formalism as set forth by Bell and Fry, and the theory of expressionism, as held by Veron, Tolstoy, Ducasse, Langer, and Arnheim, were compared. The study showed that the concept of dance as a medium for communication was more difficult to consider, there being wide disagreement among the aestheticians considered. It was concluded that an intelligent discussion of a particular dance, in terms of its expressive form, would imply that some kind of communication had taken place.

857. PLUNKETT, Frances J. *Performance characteristics in the volleyball bump pass: A cinematographic analysis of four skilled women performers.* M.S. in Physical Education, 1969. 83 p. (E. M. Roberts)

Side view films were taken of 4 skilled women volleyball players executing a bump pass. An approaching ball was projected by S in a trajectory that would allow a teammate to make the next play easily. Twelve bump passes were analyzed using cinematographic techniques. Measurements used were: joint angles, body and segment inclinations; approaching and projected ball flight angles and velocities; and angles of rebound from the arm segments. Data showed that Ss were consistent in their volleyball bump pass movement pattern over repeated trials. In the majority of trials, shoulder flexion accounted for half, or slightly more than half, of the movement of the arms in space. This movement included arm inclination change and linear motion. Acting through the trunk, knee extension combined with a lesser degree of hip extension and occasionally a small degree of ankle extension accounted for the remaining portion of the upward linear and angular change in the arm movement.

858. RYAN, Mary F. *A study of tests for the volleyball serve.* M.S. in Physical Education, 1969. 115 p. (R. B. Glassow)
A wall test and a court test were devised and tested in an actual class situation. Ss were 30 SHS girls enrolled in regularly scheduled PE classes. A scoring system was devised for each test, based on the scoring system used in the University of Wisconsin tennis forehand drive test. A total of 10 successful trials was achieved by Ss on each test. The use of 10 successful trials on each test provided a reliable measure of performance on the overhand punch serve. The 2 proposed tests do not measure the same abilities; therefore, they may not be used interchangeably. The scoring system provides an invalid measure, and fails to discriminate among individuals. The reliability of the scoring system using added trial scores was relatively high, and was lowered when multiplied trial scores were used.

859. SIMMONS, Millicent S. *Design for developing creativity in dance.* M.S. in Physical Education (Dance), 1969. 139 p. (M. Fee)
A set of hypothetical experiences in dance was created, and criteria were applied to these experiences to determine if individual creative activity was present. The writer's own experience and training in dance were used as the primary source for the dance experiences. Researchers consulted in the field of creativity include Joy Paul Guilford, Catherine Patrick, and Alexander F. Osborn. Criteria were gained from research done in creativity. By applying criteria to the hypothetical movement experiences, it appears that students had ample opportunity to gather information, recognize problems, make choices, manipulate materials, including time for incubation periods and evaluations, and that an ambience conducive to creativity was established.

860. SLOANE, Robert L. *Predicting athletic success at the United States Military Academy.* M.S. in Physical Education, 1969. 150 p. (F. Z. Cumbee)
The relationship between a number of academic variables and athletics with success in West Point's activity program was analyzed. An attempt was also made to isolate variables in the Physical Aptitude Examination (P.A.E.) which could be deleted, in an attempt to shorten the test. Data on students in the classes of 1971 and 1972 were analyzed and treated by use of multiple correlation and regression techniques. Results indicated no acceptable regression equations for any measures of interscholastic or intramural participation, the preacademic equation for the year-end PE grade had a high multiple correlation (R=.7294), pull-ups could be deleted from the P.A.E., and one of the 2 broad jumps in the 1971 P.A.E. measures could be deleted without altering its effectiveness.

861. SMITH, Judith L. *Fusimotor neuron block and voluntary arm movement in man.* Ph.D. in Physical Education, 1969. 187 p. (E. M. Roberts)
Motor behavior of normal females performing voluntary movement tasks with intact and blocked fusimotor fibers of the right radial nerve was compared. Particular focus was placed on the contribution of fusimotor innervation of the dominant arm to skill in execution of 4 motor tasks which had differential requirements for movement speed and accuracy.

Tasks included: finger-to-nose, reaction time of elbow extension and flexion, dart throwing, and reciprocal elbow flexion and extension at .66 c/s and 3.2 c/s. A differential block of the right radial nerve was obtained by infiltrating 15 cc. of .4% xylocaine solution, approximately 5 cm from the axillary apex. Results indicated that extensor damping of elbow flexion was impaired during the fusimotor fiber block. The measurable degree of impairment varied with the speed, range, and moment of inertia associated with the elbow flexion. Increased reaction time and reduction in acceleration of elbow extension during the nerve block indicated that the contribution made by fusimotor neurons to initiation of rapid movement was lost during the fusimotor fiber block. The results of the study tended to support the concept of alpha-gamma linkage in the sense that fusimotor neuron activity selectively biases the alpha motoneuron, and that activation of the 2 spinal motoneurons is "linked" or sequenced at higher centers of elicit or control voluntary movement.

862. SMITH, Marla J. *The effect of a tilted walking rail training program on the alignment of a bimanual task of children.* M.S. in Physical Education, 1969. 92 p. (J. C. Waterland)

Third grade children (N=29) participated in small groups in a tilted walking rail visual training program of 7 lessons in 3 months. Another group of equal size was also randomly chosen from the same 3 classes as a control. The experimental group missed PE class for 15 min. every 2 or 3 weeks for beam training. The vertical alignment of a chalkboard drawing test indicated from a multivariate ANOVA a difference ($P < .05$) between the 2 groups in the positioning of their lines. The vertical deviations of all the girls were smaller than the boys', and interaction between sex and training did not occur. Comparison of group mean scores indicated that the control group's alignments did not improve after a brief exposure to beam work, as the experimental group's alignments did. The training program did affect a change in the verticality of the children's bimanual tasks, and the relation between postural alignment, spatial perception, and behavior is worthy of further investigation.

863. SMOLL, Frank L. *Specificity and delay of information feedback as factors in the learning of a motor skill.* Ph.D. in Physical Education, 1970. 145 p. (M. R. Sloan)

Determined were the effects of practice, which was varied with regard to specificity and delay of information feedback for different groups, upon the learning of a gross motor skill. Ss (N=75) were randomly assigned to 5 groups of 15 each. S endeavored to learn to deliver a duckpin bowling ball at a specified velocity, under practice conditions of repetitive trial presentation. The experimental treatments were manipulated so that level of performance achieved could be compared: for groups whose practice conditions differed with regard to specificity of IF, and for groups whose practice conditions differed with regard to delay of IF. Practice involving more specific IF (quantitative IF) resulted in a significantly higher level of performance than practice involving less specific IF (descriptive IF). There appeared to be an optimum specificity of quantitative IF which the human mechanism is capable of utilizing. Practice involving IF which is quantitatively precise to .01 sec. did not result in a significantly different level of performance than practice with IF precise

to .1 sec. Practice involving immediate IF or a 15-sec. delay of IF resulted in a significantly higher level of performance than practice involving a 30-sec. delay of IF.

864. TOOLE, Tonya. *The effect of three teaching methods in golf on achievement of learners with differential skill in a related task.* M.S. in Physical Education, 1969. 115 p. (M. R. Sloan)

Determined was the effect of teaching cues, focusing attention on different aspects of a full golf swing, on achievement of learners selected on the basis of differential skill in the related task of batting. Ss were randomly assigned to one of 3 teaching methods on the basis of sex and batting ability. One method focused attention on some movements of the body essential to skill in golf, a second on the plane, range, and accelerational movements of the club, while a third combined aspects of the other 2. After 7 60-min. lessons with a #5 iron, cinematography recorded 2 swings per S. Ss with greater batting ability had a significantly greater clubhead velocity and range of pelvic rotation in the golf swing than Ss with less batting ability; different golf teaching cues did not significantly differentiate achievement in either clubhead velocity or range of pelvic rotation among learners; and body movement and club movement cues had a comparable effect on the plane of the swing, the length of the pause at the top of the backswing, the ratio of downswing to backswing speed, and the degree of extension of the left elbow.

865. WEST, Charlotte. *Estimates of reliability and interrelationships among components of selected projectile skills.* Ph.D. in Physical Education, 1969. 245 p. (L. E. Halverson)

The study involved 5 performance measures obtained from a series of trials in 3 projectile skills administered on 2 or 3 days. The 3 skills were the full swing with the 5-iron in golf, the overarm serve in tennis, and underarm serve in volleyball. Five performance measures were: actual velocity, actual vertical angle of projection, lateral angle of projection, ideal velocity, and ideal vertical angle of projection. Ss were 201 college women. Four-way ANOVAs were utilized to determine the amount of score variance attributable to timers, readers, and scorers in the collection of the measures. Only a minimal percentage of the total score variance was contributed by the observer effect, or by the subject-by-observer, subject-by-observer-by-day, and subject-by-observer-by-trial interactions. Three-way ANOVAs were utilized to estimate reliability of the measures. The 5 measures were stable estimates of performance in each sport. Multiple regression analyses, utilized to investigate the nature of the relationships among the measures, revealed several substantial relationships.

866. YATES, Martha M. *Metabolic, cardiorespiratory, and acid-base responses to arm work and to leg work.* Ph.D. in Physical Education, 1969. 148 p. (F. J. Nagle)

Differences in metabolic, cardiorespiratory, and acid-base responses to maximal and submaximal work conditions by muscle groups differing in mass were investigated. The effect of arm work on the lactate-pyruvate-hyperventilation relationship and the effect of an FIO_2 of .98 during arm

work on the physiological variables was observed. Eight female Ss were tested under maximal and submaximal work conditions with arms and legs on a bicycle ergometer, and the selected physiological variables were sampled during rest, prework steady state load of 5 watts, work, and a poststeady state load of 5 watts. The working muscle mass, and the absolute intensity of the work, were decisive factors in determining oxygen intake at absolute and relatively equal work loads. Heart rate and respiratory exchange ratio were related to the relative intensity of the work. Ventilation responses indicated a trend toward hyperventilation in arm work, as a result of increased neural and hypoxic drives. Acid-base responses reflected the relative work intensity. Hyperventilation produced no significant differences in postwork pyruvate; thus, excess lactate values did not distinguish between arm work and leg work. An FIO_2 of .98 lessened the differences in physiological responses between arm work and leg work.

Wisconsin State University–La Crosse, La Crosse, Wisconsin
(R. W. Batchelder)

867. ASSMANN, Nikki A. *Three programs for the development of cardiovascular fitness: A comparative study.* M.S. in Physical Education, 1969. 62 p. (F. H. Carter)

Ss were 28 women PE majors. Each S was randomly assigned to one of 4 groups: rope skipping, running, jogging, or control. The treatment groups followed a specific conditioning program for 8 weeks. Values for t indicated that there was a significant difference ($P < .05$) in pretest and post-test scores following an 8-week program of rope skipping, running, and jogging. There was no significant difference in pretest and post-test scores for members of the control group. Analysis of covariance indicated difference in the conditioning programs in improving cardiovascular fitness. Rope skipping, jogging, and running programs were effective in improving cardiovascular fitness.

868. BLANEY, James G. *The relation between environmental stress, psychoendocrine responses, and competitive gymnastic performance.* M.S. in Physical Education, 1969. 69 p. (E. J. Gershon)

Sixteen male SHS gymnasts were tested during one nonstressful practice meet and 3 stressful competitive meets. Stimulus response measures were taken by the Multiple Affect Adjective Check List of Zukerman and Lubin, along with a subjective estimate of stress. On meet days urinary epinephrine and norepinephrine excretion was collected. All measures were taken during the anticipatory period preceding S's actual performance. The judges' scores of S's performance were the performance rating. Results indicated significant differences between the nonstressful psychological measures' means and the stressful psychological measures' means; significant differences between nonstressful catecholamine levels and stressful catecholamine levels; a significant negative correlation between psychological measures and performance; and a significant negative correlation between the noradrenaline response measure and the performance measure.

869. CARTER, Kay I. *Development and characteristics of horseback riding programs in selected midwestern colleges and universities.* M.S. in Physical Education, 1969. 107 p. (B. A. Baird)

Four-year women's and coeducational colleges and universities (N=171) in the midwestern states of Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin were contacted and 167 questionnaires were received for a 97% return. Riding programs were offered for credit in the women's PE department in 29 institutions. A description of the characteristics of a "typical" equitation course was made, using the greatest frequency of responses as shown in replies to the questionnaire. The study revealed sufficient interest and need for a DGWS National Riding Committee clinic and rating center to warrant the consideration of planning one for the future for the Midwest. A list was constructed of the colleges and universities that offer riding in their women's PE curriculums. It also included schools that offered horseback riding in their recreation program. The style or styles taught and the ability levels were identified on the list.

870. KURTH, Ann. *Interaction analysis applied to student teachers in elementary physical education.* M.S. in Physical Education, 1969. 57 p. (E. J. Gershon)

Flanders' system of Interaction Analysis was applied to student teachers (N=4) in elementary PE. Three observers, trained in the Interaction Analysis method, observed and recorded the events of 11 elementary student teaching situations. Classes were video-taped for future reference. Data, obtained by the observers, were plotted on matrixes for analysis. Each judge, based on the results of his matrix, was asked to rate the student teacher's performance on a 9-item rating scale designed by the researcher and derived from specific matrix areas predetermined by Flanders. Kendall's Coefficient of Concordance, W, used to measure the reliability of judges' ratings on each item on the rating scale, indicated that they were highly reliable. It was concluded that the Interaction Analysis method, with minor modifications, could be applied to PE classes.

871. MUTH, Eileen. *Relationships between selected measures of self-concept and body-image to dance improvisational ability of college women.* M.S. in Physical Education, 1969. 78 p. (J. E. Foss)

Investigated were the self-concept and body-image of women PE majors and the relationship of these factors to dance improvisation. The self-concept was determined by the 16 Personality Factor Test and the body-image by a questionnaire constructed by the investigator. Junior women PE majors (N=88) were rated on their ability to improvise by a panel of 5 trained judges. On the basis of scores obtained from these ratings, 2 groups of 28 each were established to participate in the study. Group 1 was designated as the superior improvisers; Group 2 as the poor improvisers. The poor improvisers were more shy, withdrawing, and retiring than the superior improvisers. They also exhibited a higher anxiety level. The good improvisers showed a more favorable body-image. They pictured themselves as being more attractive physically and more efficient in movement situations.

872. SMITH, Robert D. *An analysis of the relationship between personality traits and success in swimming and diving.* M.S. in Physical Education, 1969. 104 p. (D. M. Wille)

Varsity swimmers and divers (N=99) in the 1969 Wisconsin State University Conference Swimming and Diving Meet were used to analyze the relationship between personality traits and success in swimming and diving. The Cattell 16 Personality Factor Inventory was used to assess personality. The participants in 18 swimming and diving events were categorized on the basis of their performance into a successful group (participants ranking in the upper half of the event) and an unsuccessful group (participants ranking in the lower half). Teams were also categorized on the basis of their performance. To determine the significance of difference between the groups (for each event) for the Cattell inventory ANOVA was computed. Results indicated that of the 304 possible relationships analyzed 17 were significant at the .05 level.

873. TOBUREN, Karen. *The effect of competition on the sportsmanship of college women.* M.S. in Physical Education, 1969. 59 p. (J. F. Foss)

Investigated was the relationship between sportsmanship measure scores and the amount of athletic competition in which the 251 college women PE majors participated. Ss were given a questionnaire and Form A of the Action-Choice Test for Competitive Sports Situations. The number of athletic events Ss had participated in during the 1967-68 academic year was the criterion used for placing them into their respective groups: competition self, competition others, noncompetition self, and noncompetition others. The 2 independent group method chi-square design was employed to measure the relationships between sportsmanship measure scores and the amount of athletic competition in which Ss participated. An item analysis was used to compare how Ss in each of the groups answered the test questions. Results of the chi square indicated no significant relationships between sportsmanship measure scores and amount of athletic competition. In all situations except item 13, the percentage of correct answers was higher for "self" than for others. The discriminatory power on all of the test items for this group was acceptable with the exceptions of item 1 for competition "self" and item 16 for noncompetition "self."

University of Wyoming, Laramie, Wyoming (J. B. Woods)

874. KOPISCHKA, Layne H. *Estimating lean body mass from anthropometric measurements.* M.S. in Physical Education, 1969. 44 p. (J. B. Woods)

875. NEIGHBORS, Ralph A. *Proposed physical education auto-instructional research library.* M.S. in Physical Education, 1969. 104 p. (J. B. Woods)

876. RICKETTS, James E. *An analysis of conventional-style and English-style place kicking.* M.S. in Physical Education, 1969. 37 p. (J. B. Woods)

877. YORK, Joe R. *A comparison of recommended weight reduction procedures and existing methods of weight reduction for college wrestlers.* M.S. in Physical Education, 1969. 67 p. (B. V. Dick)

PERIODICALS REVIEWED

*Academy Conseil International du Sport Militaire Technical Brochure
*Acta Chirurgica Scandinavica
*Acta Medica Scandinavica
*Acta Morphologica Neerlando-Scandinavica
Acta Orthopaedica Scandinavica
*Acta Paediatrica Scandinavica
*Acta Physiologica Polonica
*Acta Physiologica Scandinavica
*Aerospace Medicine
*American Heart Journal
American Journal of Anatomy
*American Journal of Cardiology
*American Journal of Clinical Nutrition
*American Journal of Diseases of Children
American Journal of Epidemiology
American Journal of Human Genetics
American Journal of the Medical Sciences
*American Journal of Medicine
*American Journal of Orthopsychiatry
*American Journal of Physical Anthropology
*American Journal of Physical Medicine
*American Journal of Physiology
*American Journal of Psychiatry
*American Journal of Psychology
*American Journal of Public Health and the Nation's Health
*American Review of Respiratory Diseases
*American Sociological Review
*Anatomical Record
Annals of Applied Biology
Annals of Human Genetics
*Annals of Internal Medicine
*Annals of the New York Academy of Sciences
*Annals of Physical Medicine
*Archives of Dermatology
Archives of Internal Medicine
*Archives of Physical Medicine and Rehabilitation
*Archives of Surgery
*Army Personnel Research Establishment Research Memorandum
Australian Journal of Experimental Biology and Medical Science
*Black Belt
*British Heart Journal
*British Journal of Industrial Medicine
*British Journal of Nutrition
British Journal of Preventive and Social Medicine
*British Journal of Psychiatry (Journal of Mental Science)
*British Journal of Psychology
British Medical Bulletin
*British Medical Journal
Bulletin of the Johns Hopkins Hospital
Bulletin of the Los Angeles Neurological Society
California Journal of Educational Research
California Medicine
*California Journal of Physiology and Pharmacology
Canadian Journal of Psychology

Periodicals marked with an asterisk have reports listed in Part II - Bibliography of this issue of *Completed Research.*

*Canadian Journal of Public Health
*Canadian Medical Association Journal
Cancer Research
Child Development
*Circulation
*Clinical Science
*Commander, Naval Intelligence Translation
*Communications from the Danish National Association for Infantile Paralysis
Danish Medical Bulletin
*Diabetes
Educational and Psychological Measurements
*Ergonomics
Experimental Cell Research
*FDA Papers
*Federal Aviation Administration, Office of Aviation Medicine
*Federation Proceedings
*Forum
*Forvardsmedicin
*Genetic Psychology Monographs
*Geriatrics
*Gerontologia
GP
Growth
*Human Biology
*Human Factors
*Indian Journal of Medical Research
*International Journal of Health Education
*International Journal of Social Psychiatry
*International Review of Sport Sociology
*International Zeitschrift fur Angewandte Physiologie
*Journal of Abnormal Psychology
*Journal of the American Dental Association
*Journal of the American Dietetic Association
*Journal of the American Medical Association
*Journal of the American Osteopathic Association
Journal of Anatomy
*Journal of Applied Physiology
Journal of Applied Psychology
*Journal of Biomechanics
*Journal of Bone and Joint Surgery
*Journal of Cell Biology
*Journal of Chronic Diseases
*Journal of Clinical Investigation
Journal of Clinical Psychology
*Journal of Comparative and Physiological Psychology
Journal of Educational Psychology
Journal of Educational Research
Journal of Environmental Health and Safety
Journal of Experimental Education
Journal of Experimental Medicine
*Journal of Experimental Physiology and Cognate Medical Science
Journal of Experimental Psychology
Journal of General Psychology
*Journal of Genetic Psychology
*Journal of Gerontology
*Journal of Health and Social Behavior
Journal of Heredity
Journal of Home Economics
Journal of Laboratory and Clinical Medicine
*Journal of Leisure Research
Journal of the Maine Medical Association
*Journal of Motor Behavior
Journal of Nervous and Mental Disease
*Journal of Neurophysiology
*Journal of Nutrition
*Journal of Occupational Medicine
*Journal of Pediatrics
*Journal of Personality
*Journal of Physical Education
*Journal of Physiology
*Journal of School Health
Journal of Social Psychology
*Journal of the South African Institute of Mining and Technology
*Journal of Sports Medicine and Physical Fitness
Journal of Teacher Education
Journal of Tropical Medicine
Kolner Zeitschrift fur Soziologie und Sozialpsychologie
*Lancet

Mental Hygiene
*Military Medicine
*NASA Technical Translation
National Conference on Social Welfare
Nation's Schools
*Nature
*Naval Intelligence Command Translation
*Naval Medical Field Research Laboratory Report
*Naval Medical Neuropsychiatric Research Unit Report
*Neurochirurgica
*New England Journal of Medicine
*New Scientist
*New York State Journal of Medicine
*Nutrition Abstracts and Reviews
*Nutrition Reviews
*Office of Aviation Medicine Report
*Office of Civil Defense Report
Parks and Recreation
*Pediatrics
*Perceptual and Motor Skills
Phi Delta Kappan
Physical Educator
Physical Therapy
*Physiological Reviews
*Postgraduate Medicine
*Practitioner
Proceedings of the Nutrition Society
Proceedings of the Society for Experimental Biology and Medicine
*Psychoanalytic Review
*Psychological Bulletin
Psychological Reviews
*Psychosomatic Medicine
*Public Health Reports
*Quarterly Journal of Experimental Physiology and Cognate Medical Sciences
Quarterly Journal of Experimental Psychology
Quarterly Review of Biology
Rehabilitation Record
*Report to Office of Grants and Research Contracts
Research Bulletin of the NEA
*Research Quarterly, AAHPER
Revue Canadienne de Biologie
*Royal Society of Health Journal
*Scandinavian Journal of Clinical and Laboratory Investigation
*Science
*Scientia
*Scripta Medica
School of Aerospace Medicine
School of Health Review
School Review
School Safety
Sociological Abstracts
Sociological Review
Sociology and Social Research
Sociometry
South African Journal of Medical Science
*South African Journal of Physiotherapy
Southern Medical Journal
Surgery
Swimming Pool Age
Swimming World
Trans-action
*United States Army Medical Research Laboratory Report
*United States Army Natick Laboratories Technical Report
*United States Department of Agriculture Report
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